



Help Wanted: DP Execs Turn To Liberal Arts

By Patricia Keefe

CW Staff

NEW YORK — Hire a liberal arts graduate for DP?

In a break with the traditional strategy of hiring computer science graduates for entry-level DP positions, two of the country's top financial institutions are trying something different — and both claim they are having considerable success.

The management information systems departments at Morgan Stanley & Co. and Lehman Brothers, Kuhn, Loeb have made it a policy to hire Renaissance people to do much more than staff all (in the case of Morgan Stanley) or certain aspects of (at Lehman Brothers) their DP shops. Specifically, they

look for liberal arts graduates who are willing to "build on the analytical and creative disciplines of their academic backgrounds to develop technical know-how . . . managerial skills and an in-depth understanding of the dynamics" of their businesses, according to Morgan Stanley.

Computer science graduates, the firms said, are more likely to be set in their ways, offer limited viewpoints and put their DP careers ahead of their careers with the firm. As a result, Morgan Stanley prefers to hire virtually all liberal arts graduates for its entry-level positions.

In the 3½ years since the program began, Morgan Stanley has selected
(Continued on Page 6)

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NEWSPAPER



Photo by G. Rifkin

The NBA has added computers to its team rosters, following other sports organizations. Story on Page 10.

Packwood Bypass Bill Slated for Senate This Week

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — A telecommunications bill, requiring telecommunications users who bypass local exchange networks to help pay for those networks, will be introduced in the U.S. Senate this week, according to Sen. Bob Packwood (R-Ore.), one of the sponsors of the bill.

The legislation, along with a number of previously introduced measures, reflects mounting congressional concern that AT&T's impending divestiture and the Federal Communications Commission's procompetitive policies are going to push residential telephone rates through the roof. The commission's December 1982 access charge decision, which im-

poses surcharges on all users of local exchange facilities beginning next year, triggered this fear, and many of the pending bills would cancel that decision (see story Page 8). To protect residential ratepayers further, some legislation would force bypassers to help pay for local exchange networks.

The measure now being drafted within the Senate Commerce Committee will be cosponsored by Packwood, who is committee chairman, and Sen. Barry Goldwater Jr. (R-Ariz.), chairman of the committee's communications subcommittee. Besides collecting some local exchange costs from bypassers, the measure, as drafted last week, put all long-distance service — intrastate as well as interstate — under FCC jurisdiction.

Privacy Plan Developed For Videotex

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The Videotex Industry Association (VIA) has developed model privacy guidelines for videotex systems that limit service providers' use of subscriber information and give subscribers the right to access and correct their records.

The association, which has more than 120 member firms, is urging the industry to recognize that "privacy is an important issue to the videotex arena," said VIA Director of Administration Robert L. Smith Jr. Computerize, Inc. and Knight-Ridder Newspaper, Inc.'s Viewdata Corp. of America will soon adopt the models for their systems, Smith said.

The model guidelines apply to all subscriber records, whether automated or paper-based, "that are collected through use of a videotex system and are in the system operator's control." "Bulk information" — data without individual identifiers, such as demographic data, can be disclosed and used for the service provider's purposes, according to the guidelines.

Information on individual subscribers, however, can only be used for five purposes: to provide service at the subscriber's request, to maintain technical operations, to prevent illegal or unauthorized use of the system, to manage and operate billing and accounting systems and to conduct market research in order to compile bulk information.

"Individual information will not be used or disclosed for any other purpose without obtaining written or electronic consent from the subscriber and giving him or her the opportunity to refuse, except for disclosure
(Continued on Page 4)

Justice Gives Prevention Tips DP-Related Crime Rate Swelling?

By Jim Bartimo

CW Staff

WASHINGTON, D.C. — Earlier this year, a Connecticut insurance firm discovered something amiss with its claims files. More than \$200,000 in bogus claims had been paid to people who did not exist. A benefits analyst in the company's Florida branch later pleaded guilty to submitting computerized false claims and collecting on the accounts.

One month later, a programmer/analyst working for the state of Washington pleaded guilty to stealing almost \$17,000 from a government system he was supposed to protect. Last month, six of Wells Fargo

Bank's source code tapes mysteriously vanished, leaving questions of theft in their wake.

Computer-related crimes and breaches of security such as these are said to account for \$100 million in annual losses to American businesses, according to Washington, D.C., lawyer August Bequai, who specializes in technology.

Computer crime and its prevention are emerging as vital concerns for today's management information

systems executive. In answer to these concerns, the U.S. Department of Justice now offers a number of reports aimed at the prevention of computer crime.

"Computer Crime: Computer Security Techniques" outlines a number of baseline concepts to aid in identifying vulnerable areas of a company's computer system. The report was produced by SRI International, Inc. of Menlo Park, Calif., based on findings from seven public and private institutions.

A total of 82 specific controls are outlined in the report. These are combined into the following seven broad security topic areas:
(Continued on Page 14)





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3rd CLASS

MC

CSC, Justice Settle Fraud Charges In 11th Hour; CSC to Pay \$2,950,000

By Jake Kirchner

CW Washington Bureau

ALEXANDRIA, Va. — Computer Sciences Corp. (CSC) and the U.S. Justice Department last week reached an 11th-hour settlement of all remaining fraud and false claims charges against the firm contained in a 1980 indictment stemming from a large CSC contract with the federal government.

Government attorneys on Tuesday asked a federal court here to drop the charges set to go to trial the following day, after CSC agreed to pay \$2,950,000 to cover all civil and administrative claims against the company. Former CSC Infonet Group President John Luke, one of five CSC employees indicted with the company, pleaded no contest to two false claims charges and was fined \$20,000.

Luke, who had been on administrative leave since the indictment was delivered, resigned from the company after the settlement was reached, according to a spokesman for the company. CSC, Luke, Peter Loux and Erwin Allen (two former CSC employees) and Herbert Blecker (president of Icarus Corp., a Maryland subcontractor to CSC on the contract) were acquitted of related charges in the indictment in a trial that ended last month [CW, June 13].

Loux and Blecker did not face further trial following that acquittal, and all remaining charges against

CSC, Luke, Allen and two other CSC employees on administrative leave, Thomas Marti and Norman Derrick, were dismissed in last week's action. According to CSC, no decision has been made about the future of Marti and Derrick in the company.

Original Indictment

In the 1980 indictment, the government charged CSC and those six individuals with 57 counts of fraud, bribery, conspiracy and making false claims in connection with the winning and billing of the National Teleprocessing Services contract. That contract with the General Services Administration for time-sharing services for federal agencies earned the company an estimated \$158 million between 1972 and 1977.

All those indicted pleaded not guilty to all counts. Trial was delayed until May after the federal court threw out the charges, most of which were later reinstated on appeal. The appeals process eventually rose to the U.S. Supreme Court, which sent the case back here for trial. The indictment was then separated into three parts for trials, the second of which was scheduled to begin last week.

William S. Lynch, head of the Justice Department legal team handling the case, said last week the settlement with CSC was arranged in about one week's time. The settlement, he said in a telephone inter-

view, "was in the best interest of the United States, and I would rather not comment on the details."

At CSC corporate headquarters in El Segundo, Calif., CSC President William R. Hoover said in a statement that "the dismissal completely exonerates CSC of any wrongdoing." He added, "We have always believed that the charges in the indictment were baseless and were, at most, the result of a contractual misunderstanding."

CSC spokesman Jim Furlong said in a telephone interview that the settlement amount was acceptable because of the extensive costs and time required to defend the firm against the charges and because the firm now is not liable for civil or administrative costs the government might have sought to recover. Also, Furlong noted, a guilty finding in the two remaining trials might have led to the firm's debarment from government contracting.

Furlong also said it was the government that approached CSC with an offer to settle the suit.

Following the jury's not guilty finding in the first trial last month, presiding Judge Richard Williams suggested the government consider settling the case rather than press forward with the remaining two trials. The suit was dismissed by the court "with prejudice," meaning the charges cannot be refiled at a later date.

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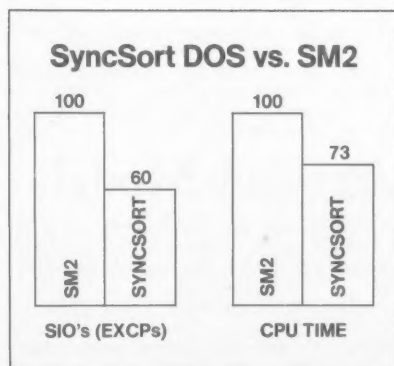
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Datacomm Briefs

IBM Asks FCC to Rule For LADT Unbundling

WASHINGTON, D.C. — IBM wants the Federal Communications Commission (FCC) to declare that Local Area Data Transport (LADT) service must be offered by Southern Bell Telephone Co. on an unbundled, detariffed basis. The computer company's recent petition is the latest development in a continuing battle that could determine whether emerging computerized communication services will be offered on a competitive basis.

In its FCC filing, IBM contended that since LADT will include protocol conversion, it is an enhanced offering, according to the FCC's Sec-

ond Computer Inquiry Decision, and thus must be detariffed and unbundled. LADT also "includes an innovative transmission technology [the multiplexing scheme that permits voice and data to be transmitted simultaneously on existing analog local loops] which should be offered on an unbundled basis so that the benefits... will be available to all local telephone users," IBM added. (However, the question of whether "Computer II" applies to Bell operating companies, as well as AT&T's Long Lines Division, has not been finally decided by the commission).

IBM, along with GTE Telenet Corp., raised basically similar objections earlier this year in comments submitted to the Florida Public Service Commission (PSC). The com-

ments were filed shortly after Southern Bell submitted its initial LADT tariff to the PSC, proposing service to a single customer — Viewtron Corp. of America. Viewtron, in collaboration with AT&T, will begin offering a commercial videotex service next September. The Florida PSC rejected the complaints and OK'd the tariff. Subsequently, AT&T filed a revised tariff, which became effective the first of this month, allowing service to other subscribers.

NTIA Seeking Inquiry Into Bypass Tech Impact

WASHINGTON, D.C. — A broad inquiry into the impact of bypass and related technologies on local telephone carriers was recommended late last month by the National Telecommunications and Information Administration (NTIA) in a comment submitted to the Federal Communications Commission (FCC).

NTIA, the president's chief telecommunications adviser, filed its comment in connection with a petition submitted earlier by Cox Cable Communications, Inc.

Cox wants the FCC to declare that cable TV systems, when used to carry interstate communications traffic, be subject to federal rather than state jurisdiction. The company is trying to get out from under a Nebraska Public Utilities Commission order which asserts state jurisdiction over Cox cable TV channels in Omaha, Neb. These channels provide MCI Communications Corp. with a bypass connection that links its long-distance network to the premises of a business telecommunications user in Omaha.

In its recent comment to the commission, NTIA contended that bypass raises a number of questions requiring further study and maintained that allowing bypass to flourish may not hurt the local telephone companies.

AT&T Submits Tariff On Audiographic Bridge

WASHINGTON, D.C. — A tariff covering an "audiographics teleconferencing service" has been submitted to the Federal Communications Commission by AT&T. It reportedly enables up to 59 locations to ex-

change audio and/or graphics information through a central bridge tied to each location by access legs. If accepted, the tariff will become effective Aug. 14.

Each audiographics call is established by an originator who designates whether it is to be audio, graphics or both by inputting codes through his Touch-Tone telephone key pad. He then dials the phone number of each location he wants to participate in the teleconference.

AT&T proposes to charge separately for each leg of the teleconferencing network. In addition, a per-minute connection fee would be charged for each connection to the bridge. Initially, bridges would be established in Chicago, Dallas, Los Angeles and White Plains, N.Y.

AT&T Asks High Court To Reverse Litton Ruling

WASHINGTON, D.C. — AT&T has asked the U.S. Supreme Court to review and reverse an appeals court decision earlier this year that obligates the phone company to pay Litton Systems, Inc. \$276 million.

The money was awarded to Litton at the end of a lengthy antitrust suit. If the Supreme Court rejects AT&T's plea, the phone company probably will have to pay additional damages to a number of interconnect companies that have filed a similar suit here in the U.S. District Court.

Late last month, Judge Thomas P. Jackson, who is presiding over the latter case, made the Litton verdict applicable to all users of "protective connecting arrangements" from 1970 to 1978.

Protective connecting arrangements became mandatory, in the wake of the Federal Communications Commission's (FCC) 1968 Carterfone Decision, for all users of independently made terminals. A key issue in the Litton case was whether the protective connecting arrangements were needed to protect the network from degradation due to shoddy foreign attachments or was a marketing ploy aimed at preserving AT&T's terminal monopoly. The district and appeals courts that considered Litton's charges agreed that protective connecting arrangements were a marketing ploy.

VIA Issues Privacy Model

(Continued from Page 1)

sure in response to compulsory process," such as court-ordered government access, the guidelines state.

Systems operators will not disclose individual information to government agencies except through subpoena, court order or other legal process or with the subscriber's consent, the guidelines state. Unless prohibited by law, the operator will give the subscriber enough prior notice to contest the disclosure.

The guidelines bind the operator to make "all reasonable efforts" to protect the data against unauthorized access and give the subscriber the right to access his records and correct errors or omissions in the records. In addition, the guidelines

specify that individual information should be retained "only as long as it is needed for the purposes for which it was collected."

In a preface to the guidelines, which are not binding, the VIA Fair Practices Committee states that "there have been no privacy abuses in the videotex industry. This voluntary effort by the industry should help keep that record pure and should help inspire consumer confidence in this new technology."

The committee is chaired by John Woolley, editor of Viewdata's Viewtron. The vice-chairman is Richard Neustadt, a Washington attorney, who as a White House aide worked on privacy issues during the Carter presidency.

Charges Dropped Against Two In IBM Trade-Secrets Case

By Jeffery Beeler
CW West Coast Bureau

SAN FRANCISCO — Charges against two defendants in the prominent trade-secrets case involving IBM and Hitachi Ltd., have been dismissed.

Hitachi engineers Kunimasa Inoue and Keizo Shirai had stood accused of conspiring to transport stolen IBM trade secrets from the U.S. to Japan. But last week, charges facing the pair were suddenly dropped by U.S. District Court Judge Spencer Williams.

In a related development, a second federal judge in neighboring San Jose, Calif., recently rejected a flurry of defense motions requesting dismissal of a parallel trade-secrets theft case against Mitsubishi Electric Corp.

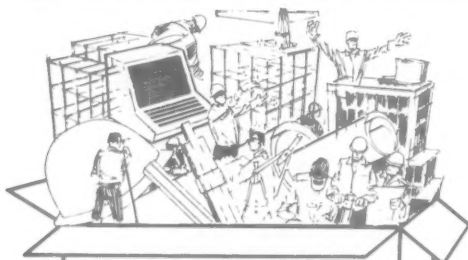
Inoue and Shirai were among approximately two dozen defendants who were indicted slightly more

than a year ago for participating in an alleged conspiracy to transport stolen IBM technology. Also indicted on similar conspiracy charges were Hitachi and Mitsubishi themselves, both headquartered in Tokyo.

Hitachi subsequently pleaded guilty to the indictments and was fined \$10,000, the maximum penalty under U.S. law.

Despite its guilty plea, Hitachi still faces a civil suit arising from charges in the alleged trade-secrets theft scheme.

The indictments against Hitachi, Mitsubishi and the other defendants resulted from an eight-month criminal investigation spearheaded by FBI undercover agents. Posing as dealers in Silicon Valley's thriving electronics gray market, the federal officers accepted \$648,000 in illicit payments in exchange for providing Japanese businessmen with proprietary IBM systems technology.



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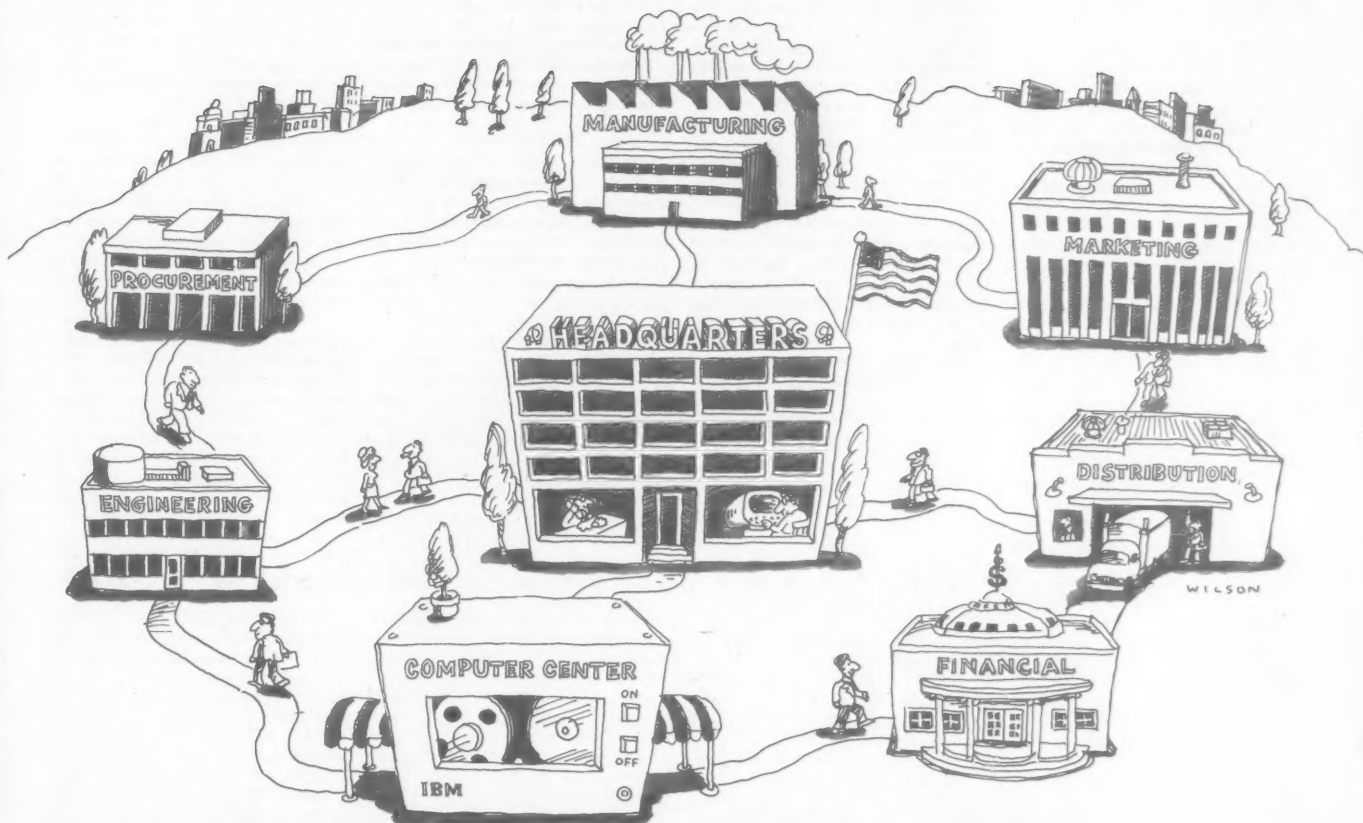
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DP Enters Renaissance, Requires New View: Exec

By Patricia Keefe

CW Staff

NEW YORK — Corporate DP has entered the Renaissance Age, and it is going to require a rethinking of the management information systems (MIS) organization, according to one of its proponents, Samuel Solomon.

Solomon is vice-president of information services for Lehman Brothers, Kuhn, Loeb, an investment banking firm here that hires college graduates with liberal arts degrees to staff its DP operation.

The renaissance of which Solomon spoke in a recent interview is typified by a move in some MIS organizations away from people with strictly computer science backgrounds toward purely liberal arts or business graduates to fill entry-level DP positions. The goal is to create a DP shop staffed with people who not only have the technological know-how to get the job done, but also understand the business side of the corporation and can interact with end users.

Differing Views

Views differ on how best to achieve this goal, as illustrated by the different philosophies at work at Lehman Brothers and one of its competitors, Morgan Stanley & Co.

A company staffed with the best and the brightest in its revenue-producing areas deserves the same in its MIS department, according to William Cook, Morgan Stanley's vice-president of MIS. When Cook joined Morgan Stanley in 1979, the typical assembler-based DP shop he found proved to be "an absolute disaster" for the environment in which it functioned.

Cook wanted an MIS department that operated within the corporate culture and set out to create a training program that would attract an extremely bright, ambitious and hard-working staff. The goal of the

program, according to a trainee brochure, is to "develop very capable managers with a thorough understanding of not just how technology can be used to enhance our business, but of the business itself."

Three-and-a-half years later, Cook feels he has succeeded, but success did not come cheaply. Morgan Stanley's training budget for the program is \$1.1 million, of which \$300,000 covers the recruitment activities that annually garner 30 trainees out of about 2,000 applicants. Trainees receive a salary of approximately \$25,000, about \$10,000 more than most liberal arts entry-level positions.

Applicants are judged in three areas: raw intellectual capacity, achievement and "fit," the result of six interviews. Trainees enter a six-month program in which they receive 20 hours of individualized instruction on top of a 40-hour work week in a shop that runs 24 hours a day. They are expected to learn in

seven weeks the contents of a year-long night school course and to begin "producing" after two to three weeks. Trainees also take a potpourri of business-related courses and become certified to sell securities.

Training Stages

The six months are divided into three stages. The trainee starts out as a junior operator under the eye of a more experienced trainee, progresses to running the console and then to supervising the computer room.

Graduates receive "hefty" raises and are placed in one of three professional areas: computer room supervisor; developmental group, which includes systems or analytic applications modeled in APL; or main systems development (traditional applications in Software AG's Natural), according to Dave Stuart, Morgan Stanley's director of training.

An "Up or Out" program promotes the best and forces those who

are unable to keep up out, thus keeping the staff size down. It also serves to keep the next tier on their toes, Cook said. As a result, while productivity has increased, he has been able to cut his staff by 10%.

The program at Lehman Brothers is less formal. Solomon prefers to hire generalists who have been out in the business world for six months to two years. His trainees are taken through corporate finance, sales and management programs, as well as working through a "buddy" training system with an experienced technical staffer.

Unlike Cook, Solomon's generalists end up in the front office, dealing one-on-one with end users. This is part of an effort to put an end to what Solomon calls "shuttle diplomacy," whereby management refuses to deal with DP and appoints a liaison instead. But without good, strong technical people in his "back office," the system would fail, he added.

MIS Execs Turning to Liberal Arts Grads

(Continued from Page 1)

roughly 100 applicants at a rate of 30 per year (not all of whom survive the program). Lehman Brothers likes to keep a balance between liberal arts and computer science expertise in its two-year program, which has only gone one full cycle.

The growing trend toward liberal arts graduates appears to be somewhat of a management backlash against uncooperative and incommunicable data processing operations that often do not understand the businesses they serve. Over the past few years, there has been a growing consensus that corporate DPers who want to extend their career paths had better learn the business side of their companies.

Both William Cook, vice-president of MIS for Morgan Stanley, and Sam-

uel Solomon, vice-president of information services for Lehman Brothers, agreed their approach to MIS is a bit radical. But there is method to their madness, said Frank Goldschmidt, a spokesman for Robert Half of Boston, Inc., an executive placement firm. "It's not so unusual for medium- to large-scale companies to take the point of view of generalist training and education," Goldschmidt said.

Broad Vision Sought

At the heart of this philosophy is the belief that technology is not an end in itself. "We are looking for individuals with broad knowledge and vision who have learned how first to understand the dynamics of a situation, then to look at the problems analytically and, finally, to develop creative solutions — skills that are essential if the MIS function is to be effective," Cook's recruitment brochure stated.

Cook and Solomon were quick to point out that their views on MIS are not right for every company. "You can go overboard [using non-DPers in MIS] and have system failures that generate backlash [against the program]," Solomon warned. Also, resistance from traditional DPers facing culture shock can add to the prob-

lem, Cook maintained.

Nonetheless, Cook believed that the barriers in most DP shops against hiring liberal arts graduates are artificial. He believed natural aptitude and ambition should be "valued more significantly than a few courses in school."

Moreover, the use of new programmer productivity tools in conjunction with these programs can be inefficient from a CPU standpoint, Solomon said. It can set off a vicious cycle whereby MIS is forced to keep adding more CPU capacity in an effort to keep up with demand, he added.

There is a definite trend of organizations hiring people with a mix of computer science and business backgrounds, according to Solomon, who added that it is no accident that financial services institutions are leading the way. "After all, we are in the information business; we analyze and react to information. We are moving away from the assembly line type of business."

There are several ways to do this, according to Solomon. "You can retool old-line people, dump them and bring in liberal arts majors instead and train them, or you can do a little of both. I think the latter is best," he said.

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Battelle Workshops to Cover Use of Scenarios in Planning

COLUMBUS, Ohio — Battelle, Inc.'s Columbus Division here is offering a series of four workshops on the use of scenarios in corporate planning, beginning this August.

The seven-step Battelle Scenario Inputs to Corporate Strategy (Basics) method will be used as the strategic planning model in the workshops, according to a spokesman for Battelle.

The workshop topics include: "The Generation and Use of Scenarios in Corporate Planning," to be held

Aug. 18-19, or Jan. 19-20, 1984, at a cost of \$495; "Developing Scenarios Using Basics," Sept. 29-30, or Feb. 16-17, 1984, for \$595; "Understanding, Forecasting, and Managing the Future of the Ceramics Industry," Oct. 26-28, for \$895; and "Understanding, Forecasting and Managing the Future of the Energy Industry," Nov. 9-11, for \$895.

Additional information is available from Battelle's Columbus Division, located at 505 King Ave., Columbus, Ohio 43201.

Effort Gearing Up to Fight Decree

Telecommuting Banned by Service Union Board

By Marguerite Zientara
CW Staff

WASHINGTON, D.C. — Telecommuting — thought by many to be the solution to child care needs, wasted gasoline and handicapped workers — has been banned by the Service Employees International Union (SEIU) here.

The ban, passed by SEIU's executive board a year ago, is being fought by the Center on National Labor Policy, Inc., a public interest law firm in North Springfield, Va.

Although telecommuters in the U.S. now number only a few hundred, the University of Southern California's Center for Future Research has predicted that in 10 years there could be 5 million people working at computer terminals in the home, in jobs ranging from DP to accounting.

SEIU, however, a union of 780,000 consisting of mostly clerical and health workers, passed the ban on computer homework "because we feel other kinds of homework used to take advantage of workers and that it would be better for people to stay in the permanent and regular work force," explained Jackie Ruff, executive director of District 925 of SEIU.

Citing the home-based garment industry, Ruff noted, "I'm sure you've seen articles explaining that, in fact, the people who are doing the homework don't have any benefits, vacation, job security and so on, and are directly substituting for people who would have those more decent working conditions were they employed directly by an employer."

A different possible motivation emerges from the Center on National Labor Policy's point of view. "I think basically [the union passed the ban] because it's difficult to organize people who work at home," suggested Jon Imbody, public relations director for the center.

Advocates of telecommuting cite cost savings in commuting and child care, more time with one's children, flexible work schedules, increased productivity, better attendance and higher quality work.

On the question of the child care benefits of telecommuters, Ruff ex-

Course Targets IBM SPF Users

LAKE FOREST, Ill. — MVC Associates, Inc. has announced the addition of "Structured Programming Facility (SPF) for New Users" to its interactive computer-based training library.

The new course utilizes full screen simulation techniques to provide students with a basic working understanding of IBM's SPF, the vendor said. The course runs under IBM's Interactive Instructional System (IIS) or any IIS-compatible system.

Including computer-based tutorials and a student guide, the course can be purchased for \$1,950 or leased for \$85 per month; a 30-day free review is available. For information, contact MVC Associates at 849 N. Summit Ave., Lake Forest, Ill. 60045.

plained, "One of the things we work toward is some kind of assistance for child care. So we feel the way to deal with child care and working mothers is to pay them enough so they can afford it on their own, and for employers and government funding in some way to help support child care.

"We don't think the way to do it is to take somebody and say 'We're not going to give you health insurance or any other benefits, and we're going to pay you the least we can get away with,'" she added.

Acknowledging that saving fuel and reportedly higher productivity rates are not the union's central concerns, Ruff said, "Our real concern is

that people we represent be able to have a decent, fair standard of living, so if our members are saying they can't afford to commute to work, we try to see if through collective bargaining we can get wages that will allow them to commute."

The Center on National Labor Policy is coordinating groups and associations interested in telecommuting and other homework, with an eye toward petitioning Labor Secretary Raymond Donovan and Vice-President George Bush, who is in charge of the Regulatory Task Force, to have the ban lifted.

Among the groups the center is working with are the National Alli-

ance of Home-Based Business Women, the National Association for Cottage Industry and the National Homeworkers Extension Council.

"Right now it's just a matter of knocking on a lot of doors and getting a lot of support and convincing people in the administration that it's an issue worthy of their consideration," Imbody said.

"We've talked to a lot of people in the Labor Department, and right now we're focusing on the White House and the Regulatory Task Force," he said. "It seems to be the kind of thing that the more people who find out about it, the better our chances are."

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- Incremental Backup. ABR can backup VSAM DF/EF files based on the update indicator (multi-volume excluded). If ABR finds that the update indicator is on for the data component, ABR will backup all of the components associated with this file.
- ABR will ARCHIVE or SUPERSCRATCH VSAM DF/EF files based on the last reference date. ABR will scratch and uncatalog these data sets.
- ABR will preallocate and catalog DF/EF files.
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- COMPAKTOR will move DF/EF files except for catalogs or system data sets (ex: page data sets).

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Portable Micros Update Federal Auditors' Arsenal

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — Federal auditors, stepping up efforts to automate their far-flung activities, have begun arming their field investigators with low-cost, briefcase-size computers. Office of Management and Budget Deputy Director Joseph R. Wright said last week.

The government "is finally taking the inspector generals into the 20th century," Wright said July 6 at a press briefing on this year's activities of the President's Council on Integrity and Efficiency. The council, headed by Wright and consisting of the inspector generals or their equivalents at 20 federal agencies, has this year produced \$5.4 billion in savings and cost avoidance in federal programs, according to Wright.

Some of the most innovative work of the council, he said, has been in the areas of computer matching to detect fraud in government assistance programs, an effort that has extended to federal and state programs in all 50 states, and in the area of automated auditing.

Portable Computers

To automate further the auditing process, the inspector generals' offices have begun using Compass computers from Grid Systems Corp.

The small Compass system, costing about \$6,000, utilizes a 16-bit processor and has 256K bytes

of random-access memory and 384K bytes of bubble memory.

The power, memory size and graphics capability of Grid Systems' Compass make it "ideally suited" for federal contract investigations because of the large amounts of raw data that must be scrutinized, according to Lawrence L. Cresce, assistant U.S. Department of Transportation (DOT) inspector general for investigations.

Cresce said the machines are being used in the department's current push to crack down on bid-rigging fraud in highway construction.

In 40 States

According to the government, as of June 30, bid-rigging investigations were under way in 40 states, with grand juries convened in 20. Since 1981, there have been 318 indictments, with 135 corporations and 137 individuals convicted; \$40 million in fines have been imposed; and prison sentences totaling 37 years handed down for more than 100 individuals.

The DOT said the portable computers are also being used to audit its own computer centers, look for possible misuse of government computers by department personnel, search for government loan fraud and audit the use of government vehicles.

A department official said the DOT is using one Compass computer and is testing four more for use by its inspector general's staff.

FCC Procompetitive Stance Piquing Action in Congress

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — If the number of bills introduced in the past few months is any indication, Congress has more than a casual concern that actions by AT&T and the Federal Communications Commission's (FCC) procompetitive stance could put an unfair burden on residential telephone users. For example:

- S. 1382, introduced early last month, would put a cap on basic telephone service by limiting rates charged by any carrier to 110% of the "national average for comparable service." Sen. Frank Murkowski (R-

Alaska), a cosponsor of S. 1382, suggested adding a surcharge to long-distance calls to make up any shortfall caused by the 110% cap. The other sponsors of S. 1382 are Senators Ted Stevens (R-Alaska), Larry Pressler (R-S.D.) and James J. Exon (D-Neb.).

- Rep. Jim Bates (D-Calif.) has introduced three bills:

H.R. 3364 would cap basic telephone rates and require long-distance carriers and their customers to reimburse local carriers for the costs of accessing the long-distance network — thus nullifying the FCC's access charge decision.

H.R. 3365 would give the FCC explicit power to forbear from regulation and to establish a competitiveness test plus other criteria that the FCC would have to employ in using that power. Also, the bill would require all local telephone companies, beginning Jan. 1, 1986, to offer equal access to all of their interexchange customers — carriers as well as private network operators. However, the FCC could defer this provision until 1990 for rural carriers and those lacking "appropriate electronic switching equipment."

H.R. 3366 would allow local telephone carriers to continue offering already-installed terminal equipment at tariffed rates until it is fully depreciated; would require Bell operating companies, if they want to market new terminal equipment or enhanced communications services, to do so only through separate subsidiaries; and would force the operating companies to buy specified percentages of their terminals and related products from non-AT&T suppliers for 10 years after divestiture.

- H.R. 3440, introduced late last month by Rep. Al Swift (D-Wash.) and Rep. Ron Wyden (D-Ore.) — two members of the House of Representatives Telecommunications Subcommittee — would abolish the FCC's access charge decision and replace it with levies on long-distance carriers and users, including those bypassing local exchange facilities. Specifically, a Universal Service Board, composed of two FCC commissioners and three state commissioners, would develop the levy to be imposed on bypassers. The board would consider, among other things, the value to private systems and to the public of nationally available and affordable communications services, as well as disincentives to interconnection created by access charges. Other provisions of the bill would give the states increased authority to regulate intrastate facilities that carry interstate traffic — an area now controlled largely by the FCC — as well as authority to regulate all "two-way communications within the state."

Growing Debate On Access Costs Seen Emerging

WASHINGTON, D.C. — The temper of the growing debate over telephone rates is suggested by these comments from a hearing convened late last month by Rep. Glenn English (D-Okla.), chairman of a House of Representatives Government Operations subcommittee:

- One witness, Rep. Ron Wyden (D-Ore.), coauthor of H.R. 3440, said the House Telecommunications Subcommittee is looking at different approaches to minimize or eliminate the adverse impact of the Federal Communications Commission's (FCC) access charge decision.

- William R. Stump, AT&T's assistant vice-president for federal regulatory matters, said "access charges are probably the most important single mechanism for preserving universal service" rather than being a villain, he added. The access charge decision is "a powerful force for good," and without this mechanism, local telephone carriers — Bell and independent — are likely to lose more and more of their revenues to bypass services, he said.

- Dwight Welch, a spokesman for the National Telephone Cooperative Association (NCTA), made up of rural carriers, contended that pricing communications services on the basis of cost conflicts with the idea of universal telephone service because many rural subscribers cannot afford the extra costs of extending telephone lines to their homes.

- Lee Richardson, vice-president of the Consumer Federation of America, called the access charge decision "a \$7 billion rate case in which every household lost \$100 a year but did not participate." He said the decision would confront some subscribers with "phone or eat" choices and asked for deferral or reversal of the FCC's decision.

Shortly after the Government Operations Subcommittee hearing, Rep. Tim Wirth, (D-Colo.) who is a key factor in any effort to draft communications legislation, said there is "growing agreement within the subcommittee that we must act now to give direction to the industry and ensure [universal telephone service]."

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Correction

Perkin-Elmer Corp. recently introduced a family of magnetic disk drives, rather than a family of magnetic tape drives as was recently reported [CW, June 13].

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ALEXANDER	\$52,546	\$55,483	-2,937	5.29
ADAMS	\$53,837	\$56,357	-2,520	4.47
MCNEIL	\$95,760	\$96,929	-1,169	1.21
MCKAY	\$36,448	\$39,694	-3,246	8.18
BERGER	\$85,691	\$90,515	-4,824	5.33
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NBA to Join Ranks of Computerized Sports

By Bob Johnson

CW New York Bureau

NEW YORK — Basketball fans, teams and players will all be winners, according to the National Basketball Association (NBA), now that it has joined the ranks of computerized professional sports organizations.

One of the last major sports to get into computers, the NBA will be installing systems from MDS Qantel, Inc., which according to officials, will for the first time fully automate the league's operations and lay the groundwork for networking valuable information between the NBA and its member teams.

Under the terms of the agreement, Qantel will supply the NBA and its

marketing arm, NBA Properties, Inc., with a Qantel System 40 CPU with 256K bytes of memory, 150M bytes of disk storage, three high-speed printers and seven CRT terminals. The system will also be equipped with communications capabilities that will link the NBA's new mainframe in its New York headquarters directly with team terminals and terminals in the NBA Properties' offices.

The first NBA team to acquire a computer was the Los Angeles Lakers. The Lakers will also install a Qantel System 40 with four terminals and a printer. Jerry West, general manager of the team, said in a prepared statement that the computer will be used initially to automate accounting and financial management.

Future plans call for quantifying and qualifying information that will aid "on-the-court" performance.

NBA Properties will use the system in an aggressive marketing effort, the NBA maintained, which will include complex information processing for licensing, sponsorship agreements, video and a publishing business.

According to the league's commissioner, Lawrence O'Brien, installation of the system, designated as the "Official Computer of the NBA," is a progressive step in linking sports with technology.

"The NBA has taken the lead in creating an information network for its teams rather than leaving its teams to develop their own DP sys-

tems independently. This network will enable teams to tap instantly into our information bank for game statistics, player contract information, attendance figures and other vital data," he said.

An NBA spokesman pointed out that basketball coaches use statistics much more often than the public realizes. The new system will reportedly enable coaches to sharpen significantly sudden changes in strategies, which can often prove crucial to the outcome of an important game.

In addition to game applications, the new system will automate the NBA's entire accounting and financial systems, according to the spokesman. This kind of application will strengthen both the financial stability of the league and of each team, O'Brien said.

The league's tie-ins with wire services, typesetting services and telex messages will be integrated with the system's word processing terminals. Player and team data bases will be accessed and used extensively by all departments of the NBA, the spokesman said.

Another application for the new system will be in the NBA's collective bargaining agreement function. "In 1984, we will enter into one of the most unique collective bargaining agreements in the history of professional sports, with every team having a minimum and maximum amount of money to spend on players' salaries," O'Brien said.

"It is absolutely essential that up-to-the-minute information on teams' salary commitments and the salaries of all veterans and rookies be immediately available," he added.

Current information on the status of all future draft choices held by individual teams and the location of all former NBA players will also be available on the system.

Scheduling of officials will also be handled, the NBA noted, adding that the system will provide teams with the best way to schedule their travel and transmit statistics to media. O'Brien stated, "Fans and teams will have more detailed information than ever before. In future years, the computer system also may be used for Most Valuable Player and All-Star balloting."

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THE SOFTWARE ENGINEERS

Quarterly Covers DP Court Cases

ASHEVILLE, N.C. — A new quarterly featuring summaries of significant court cases involving computer technology has been introduced by Research Publications, Inc.

"The Computer Law Monitor" was designed to brief the reader on the latest court cases involving the computer industry, including acquisition contracts; employment contracts; copyright, patent and trade secret protection; licenses; service bureau and time-sharing contracts; taxation; and computer crime.

The subscription price for one year is \$49.50, and the quarterly may be ordered from Research Publications, Inc. through P.O. Box 9267, Asheville, N.C. 28815.

But Users Like Work Conditions Less

CRT Users, Nonusers Under Same Stress: Study

By Marguerite Zientara

CW Staff

MADISON, Wis. — CRT users do not experience any more stress than non-CRT users, according to a recent study by researchers at the University of Wisconsin (UW) Medical School's department of preventive medicine.

However, CRT users complain more about working conditions than non-CRT users and show somewhat increased levels of job dissatisfaction, the researchers found.

The three-year study, sponsored by the National Institute for Occupational Safety and Health, compared the health and well-being of 248 CRT users with 85 nonusers in similar jobs for the state of Wisconsin.

CRT users complained about job design, citing underutilization of skills, decreased supervisory and staff support and less job autonomy, according to Steven Sauter, UW industrial psychologist.

Compared with nonusers, users found their workstations less pleasant, chairs less comfortable and odors, dust and crowding more irritating. About a quarter of the users were bothered by screen flicker and distance, height or tilt of the CRT screen or keyboard placement. Glare was the most common screen-related complaint.

CRT users complained slightly more than nonusers about eye irritation and back/neck/shoulder strain, the study found. But many more us-

ers reported burning eyes — 71% vs. 56% of nonusers. CRT users wearing monofocal glasses or contact lenses complained the most about eyestrain, Sauter said.

"Even though health problems were not dramatically elevated among CRT users in our recent study, these problems should not be ignored," Sauter said. "About one-fourth to one-third of CRT users complained of chronic eyestrain and musculoskeletal problems."

"More research is needed to determine how to improve working conditions to enhance CRT users' well-being and productivity," he added.

Certain patterns emerged in both

users and nonusers. Older, married people reported less strain of all types than younger, single people, according to the study. In addition, attitudes related to well-being and working conditions varied in relation to the type of work performed, according to the study.

Those at higher professional levels rated working conditions more favorable and reported fewer health problems, while data entry workers reported the most strain.

In a 1981 study, Sauter and UW preventive medicine scientist Robert Arndt found that copy editors using CRTs at a major metropolitan newspaper complained about eyestrain

and irritation, but did not report a high degree of musculoskeletal problems, stress or job dissatisfaction. That may have been because they have considerable control over their work, Sauter suggested.

The exact causes of strain are not known, although the latest study showed that poor lighting conditions and job design are related to visual strain.

Despite all the complaints, CRT users reported fewer psychological stress symptoms than nonusers, such as depression, racing or pounding heart and tension, Sauter said. CRT users also reported fewer mood disturbances.

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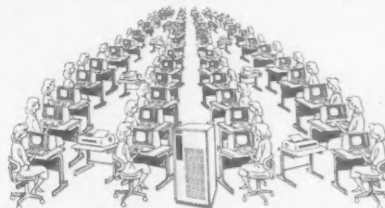
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On-Line Services Profiled in Guide

CHERRY HILL, N.J. — Data Decisions here recently published a 52-page directory profiling 291 on-line services that provide information on a range of topics.

"On-line Services," according to Data Decisions, was designed for corporate executives seeking immediate access to specialized bases of information and includes a quick-reference summary index and descriptions of the key capabilities of each data base.

The directory (Report 10-CL) is available for \$29 from Data Decisions, 20 Brace Road, Cherry Hill, N.J. 08034.

Book Covers Methods Of CAD Selection

SUDBURY, Mass. — "Economics of CAD, Solving the Puzzle," a 35-page booklet describing a computer-aided design (CAD) selection methodology, is available from Technology & Business Communications, Inc.

The softcover, magazine-size publication includes information on determining the potential value of a CAD system.

The booklet (Report TD-101) is available for \$19 (\$23 outside the U.S.) from Technology & Business Communications, c/o The S. Klein Newsletter on Computer Graphics, Suite 25, 730 Boston Post Road, Sudbury, Mass. 01776.

International Report

FROM THE CW INTERNATIONAL NEWS NETWORK

JAPAN

TOKYO — Sord Computer Corp. plans to establish a new division called World Advanced Technology Group, which would cooperate with international high-technology business ventures in joint product development, manufacturing and marketing. Sord has already contacted Charles River Data Systems, Inc. in the U.S., whose 32-bit M685 micro-computer architecture was the result of a joint effort.

TOKYO — Of the top 50 computer vendors in Japan, 42 earned more than ¥10 billion (\$45 million) in annual revenues last year, which qualified them as members of Japan's Ten-Billion-Yen Club.

Club membership is composed of 27 hardware companies, eight software and service firms and seven leasing companies. Of the 27 hardware companies, seven are foreign vendors and seven are OEMs.

UNITED KINGDOM

LONDON — International Data Corp. (IDC) Europa Ltd. here has noted a 200% growth in the use of IBM's DOS/VSE, contrasted with a 35% reduction in DOS/VS usage.

The IDC report, called "IBM Software Environment — Western Europe," sees two main factors influencing the growth anticipated in the software and services industry. It

predicts that expenditure per system will increase 9% a year between 1983 and 1987, while the number of systems installed will increase at approximately 18% a year. The study is available for £1,250 (\$1,900) from IDC Europa at 2 Bath Road, London W4 1LN, England.

WEST GERMANY

MUNICH — Even though Volkswagen AG is the parent company of Triumph Adler, the company selected Nixdorf Computer AG to develop large numbers of custom-made multifunction office automation terminals to meet its special needs. Volkswagen has provided a development budget of over DM one billion (\$392,600,000), although the product line is not expected to debut until 1986 or 1987.

STUTTGART — Ericsson Information Systems, Inc. and Philips Information Systems, Inc. have both expressed interest in taking over the financially troubled David Computer Ltd., a small systems manufacturer here which is reportedly filing for reorganization. Industry insiders believe bankruptcy is inevitable for David Computer.

AUSTRALIA

SYDNEY — Orders were so heavy for IBM's new System/36 that IBM Australia Ltd. quickly exceeded its 1983 allocation and must conduct a

lottery to decide which users get their machines first. IBM has reportedly received over 100 orders in the two-week period following the announcement, but industry analysts estimate that Australia's allocation was probably between 35 and 80 systems.

BRAZIL

BRASILIA — The Special Department of Informatics recently passed the Normative Act, a law that funds nationalized manufacturing companies, including computer firms. According to Ricardo Maciel, subsecre-

tary of Strategic Activities in Brazil, the law will allow Brazil's economy to retain approximately \$800 million that has traditionally been lost to foreign and multinational groups.

ITALY

MILAN — Two specialized networks for data and text communications have been established here by the Italian Minister for Post and Telecommunications, Remo Gaspari. Italtel, the largest Italian telecommunications manufacturing company, is the main supplier of the equipment.

HP Chief to Chair Commission

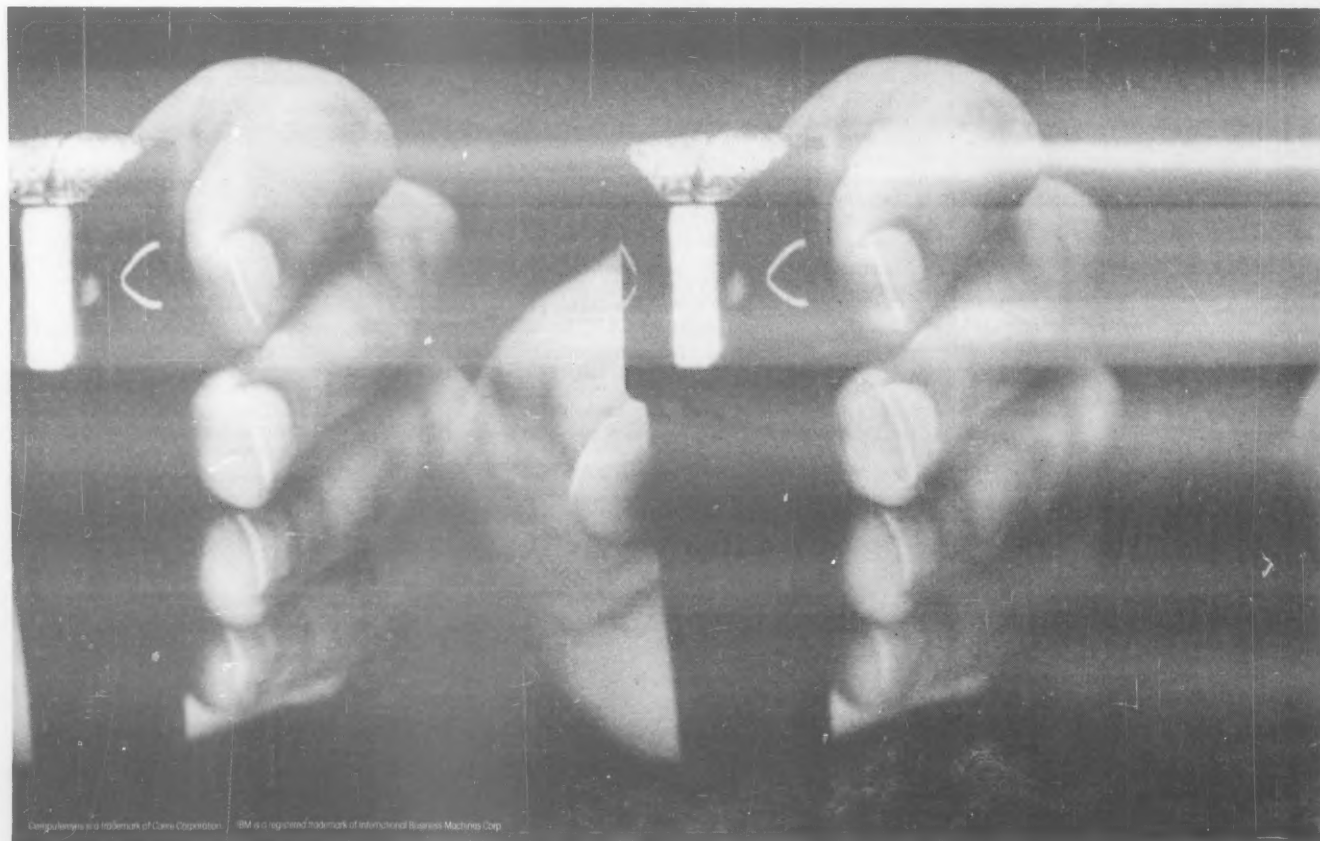
WASHINGTON, D.C. — President Reagan has named Hewlett-Packard Co. President John A. Young to chair the Commission on Industrial Competitiveness, established to recommend steps the U.S. can take to meet international high-technology competition.

The commission will consist of two dozen representatives of industry and labor sectors affected by high technology or academic institutions prominent in high technology. The commission will work with the Commerce Department and the Cabinet Council on Commerce and Trade and focus on

three major areas:

- Identifying problems and opportunities for the private sector for new products and services.
- Developing specific recommendations for federal technology policies to create a favorable climate for industrial progress.
- Recommending changes in government policies at the federal, state and local level to improve private-sector ability to compete in the international marketplace and create jobs for American workers.

The commission will complete its work by Sept. 30, 1984.



Despite Traditional Keyboard Fears Survey Finds Execs Taking an Interest in Micros

By Katherine Hafner
CW Staff

For many of today's executives, close encounters with a keyboard are anathema.

But a change is slowly taking root in the higher reaches of corporations: More and more executives are defying tradition by cultivating an interest in microcomputers.

An informal *Computerworld* survey of nearly 30 middle- and high-level executives indicated that, while widespread use of microcomputers among executives is yet to be seen, many are beginning to catch on to the benefits of machines that can tell them at the push of a button things that would ordinarily demand time-consuming manual calculation.

Though a smattering of executives who use microcomputers utilize the full range of the machine's capabilities, the survey indicated that most restrict their use to electronic spreadsheets.

Five years ago, Allen Sneider, a partner at the accounting firm of Laventhol & Horwath in Boston, was considered odd because of his interest in micros.

Sneider established a computer applications services department at his firm, and today every office in the country has a person well acquainted with micros who can instruct others in their use.

Today, Sneider is a confirmed be-

liever in the value of microcomputers.

"Executives are bottom-line people," Sneider said. "You have to prove to them that using a [personal

computer] is more efficient and will expand their productivity. It's very gratifying to be able to accomplish something in a shorter amount of time."

Execs Learning Micro Skills To Enhance Communications

Several of the executives questioned in a recent *Computerworld* survey use microcomputers not so much for business applications as for enhanced communications among themselves.

The School of Management and Strategic Studies in La Jolla, Calif., teaches corporate executives how to use microcomputers so they can take them home and communicate with each other over a closed-circuit "think tank," where they grapple with social, political and economic issues. Students at the school have included top executives from such corporations as Westinghouse Electric Corp., General Mills, Inc. and TRW, Inc.

As part of the \$24,800 tuition for two years, participants are provided with a terminal that is linked by telephone to a central Electronic Information Exchange System in New Jersey for 24-hour conferencing.

While the primary role of the micro is to provide a forum for the continual exchange of ideas relevant to their professions, some students have found additional uses for them, according to the survey.

Deborah Smith, vice-president of planning and corporate strategy at Beneficial Corp. in Peapack, N.J., knew virtually nothing about computers when she started the program in 1982. Now she plans to link her Apple Computer, Inc. Apple II to the company's mainframe for accessing the data base.

"If you have access to the data base, you don't have to go to somebody else," Smith said.

Van Andersen, general manager of Westinghouse Electric's Power Generation Service Division in Broomall, Pa., uses his Kaypro, Inc. Kaypro II mainly for the conferencing, but also has begun to explore electronic spreadsheets.

Sneider maintains that microcomputers not only increase efficiency, but also allow executives to be more creative in their work.

"If they understand the tools, they can create useful and practical applications," Sneider said. "You really have to know very little about the boxes themselves. It's mostly a matter of knowing what you do in your profession and understanding the software documentation."

Some executives are so taken with their micros that they report spending at least an hour a day at them.

Otto Payonzeck, president of Universal Manufacturing Corp. in Paramus, N.J., with 5,000 employees, uses his microcomputer for graphics. "It's a lot easier to look at pictures than it is to look at numbers," he said. "It's easy to see a trend with a single line, but if you flash a lot of numbers on the screen, you don't know what's happening."

Payonzeck also uses the computer to examine plant efficiency and audit reports. He has plans to link it to the company's IBM 4341 mainframe.

Robert Mitchell, vice-chairman of Celanese Corp., has been using a personal computer for four months.

"Businesses are more and more going to computers and data base acquisition," he said. "I bought my micro because I want to be able to appreciate the changes in the information world."

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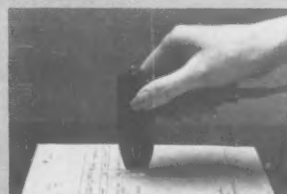
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High-Tech Policing Topic of Justice Reports

(Continued from Page 1)

● **Manual Assurance of Data Integrity:** Individuals that come in contact with the data before and after it is entered into the system must be assigned specific responsibility for its safety, the report stated. "Each party must be held accountable for their integrity and safekeeping through confirmation of receipt, inspection at each manual-handling setup, use of printed proprietary notices on documents and proper archiving or destruction of used documents."

● **Physical Security:** The area that contains the computer system must be secured within physical barriers. The area should be restricted to authorized personnel with identification badges.

● **Operations Security:** "Operations of computers requires many controls," the report said. These include isolation of sensitive computer production jobs to minimize exposure to modification, destruction, ex-

In this first of a three-part series, Computerworld examines some techniques for preventing computer crime suggested in the U.S. Justice Department's most recent report.

Next week: Electronic Funds Transfer — an uncharted gray area.

posure or unauthorized use. Also included must be contingency and recovery plans for the loss of data.

● **Management Initiated Controls:** The report stressed the need for a management commitment to security. This commitment includes a security committee that would establish the duties of the auditor and computer security manager. "Data should be classified for properly distinguishing degrees of control," the report continued.

● **Computer Program Development and Maintenance:** Users and auditors alike are encouraged to maintain control over software changes and access to the programs themselves.

● **Computer System Control:** Input data validation, exception reporting and the use of cryptographic protection are all seen as ways to control access to the computer system. "Controls in the computer operating programs and other major program sub-

systems used in many applications are essential," the report explained. This means that personal data bases must conform to privacy constraints.

● **Computer System Terminal Access Control:** Finally, access to computers from remote terminals is seen as providing a major potential for loss, especially when the computer is accessible from a common dial-up telephone line. "Transaction privileges, output display restrictions, terminal identifiers, login protocols and password access by authorized users are essential."

"Computer Crime: Computer Security Techniques" (PB83-111054) is available for \$13.50 from the National Technical Information Service, Springfield, Va. 22161.

Two DPers Caught in Ariz.

By Marguerite Zientara
CW Staff

PHOENIX — The head of computer operations for Arizona's Department of Economic Security and his data systems manager resigned last week after the Attorney General's Office found they had used the state's computer for personal reasons.

Thomas Stultz, director of the Office of Data Administration, and Robert Ewert, data systems manager, handed in their resignations after a three-week investigation uncovered evidence of private use of the taxpayer-funded system.

Although the two are not guilty of breaking the law, state policy dictates that state equipment be used for official purposes, Assistant Attorney General Tom Rogers explained.

Mailing List

"Let me indicate the type of thing that was being kept [on the system]," Rogers said. "They had a mailing list for the Spina Bifida Foundation, which is a private foundation. It is not supported by the state, but there was no element of personal gain there."

The investigation was reportedly precipitated by the director of the Department of Economic Security after he learned of possible misuse of the state computer.

"This is an ordinary case," Rogers noted.

"Anytime we receive information regarding use of any state property for other than state purposes, we look into it to determine the nature and extent of it," he explained.

A spokesman for the Department of Economic Security declined to comment on the case. While Stultz could not be reached for comment, Ewert said, "I have no question that the department will be able to continue to function without us." Ewert would not comment on the case itself.

"Exactly how compatible will Lanier systems be with my systems?"

Compatibility. That's one thing you won't have to worry about with Lanier. Because Lanier is dedicated to developing systems that support IBM's SNA, one of today's most widely used communications architectures. So you can plan your office automation program for the future knowing your IBM mainframe computer and your Lanier systems will communicate without special programming. And as other methods become accepted industry standards, Lanier will support them, too.

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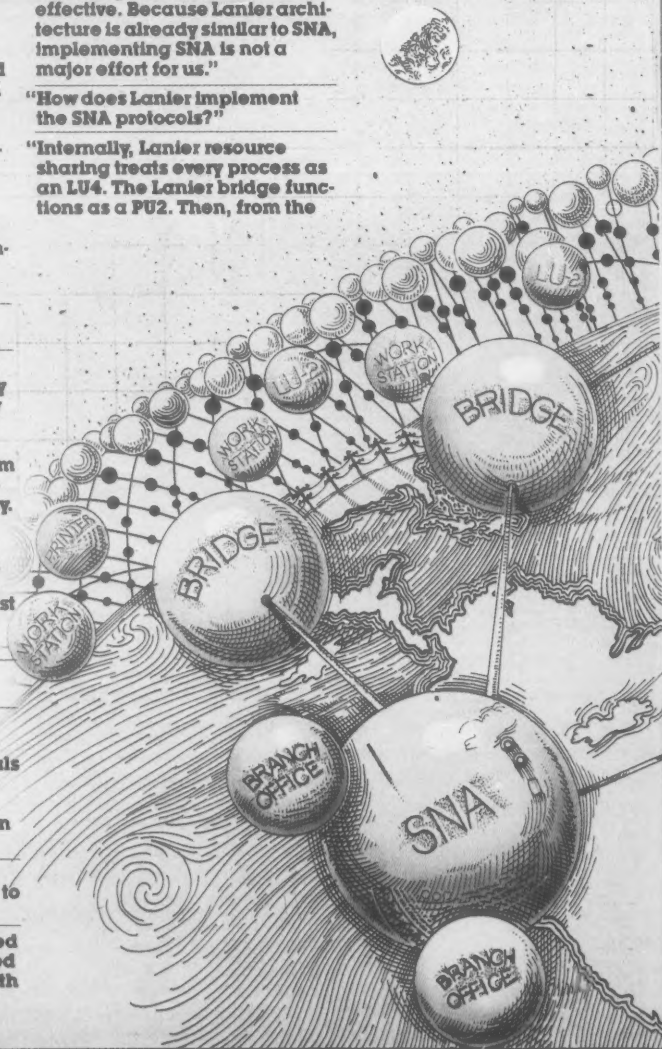
"But isn't SNA compatibility difficult and time-consuming to implement?"

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bridges to your IBM mainframe are straightforward and cost-effective. Because Lanier architecture is already similar to SNA, implementing SNA is not a major effort for us."

"How does Lanier implement the SNA protocols?"

"Internally, Lanier resource sharing treats every process as an LU4. The Lanier bridge functions as a PU2. Then, from the



Agree to Explain Just How They Did It Ex-DP Chiefs Plead Guilty to \$1.3 Million Scam

By Patricia Keefe

CW Staff

EAST ST. LOUIS, Ill. — After pleading guilty to a \$1.3 million computer purchasing and leasing scam, two former DP department heads at Southern Illinois University (SIU) have agreed to explain to state officials how the scam was perpetrated and what can be done to prevent it from recurring.

Barry Bateman, SIU's former executive director for computing affairs from 1976 to 1981, and E. Hubert Massey, who served as director of computing affairs from 1976 to 1978 and then as computing center director from 1978 to 1981, pleaded guilty

June 13 in U.S. District Court here to charges of conspiracy, mail fraud and interstate transportation of fraudulently acquired funds. The two admitted they had purchased and leased computer equipment for the university at inflated prices through bogus suppliers, according to Shari Rhodes, chief trial counsel for SIU's Carbondale campus.

Currently out on bail, Bateman and Massey could receive up to 20 years in prison.

The charges were the result of a grand jury investigation that was sparked by a separate \$1.3 million civil suit. That suit charges nine people, including Bateman and Massey,

with the purchase and leasing scheme [CW, May 9]. No court date has been set for the suit, which was filed by SIU in March.

The grand jury did not return charges against any of the other seven defendants.

Rhodes said the admissions of guilt from Bateman and Massey on the very issue of the civil suit will certainly aid the school's efforts to recover actual and punitive damages alleged to have resulted from Bateman's scheme. Attorney Charles Burton of Austin, Texas, who represented the defendants along with attorney Roy Minton, disagrees with Rhodes. "The indictments [in the

two cases] are not identical. I think she's out in left field in some respects [with the civil suit], and I expect she'll realize that and amend her complaint before coming to trial."

Acknowledging that Bateman and Massey "did a little dealing for themselves in conflict of interest with their duties to the university," Burton said the duo's activities were "the result of their efforts, acting in the best of interests at the outset, to find a way to acquire the kind of equipment necessary for the university. I'm not making excuses about them per se, but along the way they became entangled in a web they wove."

Burton said the two bent state laws to lease equipment when they realized they could get "more for less immediate dollars." Overall, Burton said, there was a problem with computer departments wanting to be "first class in the field" and giving their department officials a free hand to run the departments without sufficient audit provisions and control over what the officials are doing.

Moreover, because of the newness of the industry, Burton suggested many state officials have neglected to formulate policy concerning the acquisition of computer equipment and services. Illinois law, for example, does not require competitive bidding for the purchases outlined in the civil suit.

Bateman, who had left SIU in 1981, 2½ years before the fraud was discovered during a routine audit, resigned his position as assistant vice-president of general administration at the University of Maryland in April. Bateman held responsibilities at the University of Maryland similar to those he exercised at SIU, according to Leo Geier, associate vice-president of university relations at the University of Maryland's central administration.

Geier said that as far as he knows, there are no plans to investigate the possibility of a similar scam at the University of Maryland.

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Manage Data, Not Technology: IBM Consultant

By Jeffrey Beeler

CW West Coast Bureau

LOS ANGELES — In order to survive, large businesses will have to change the way they build and maintain their information systems, shifting emphasis from managing technology to managing data. While such an evolution in systems-building strategy is "almost inevitable," it represents a radical change in the way most corporations handle computer-based technologies, according to IBM Consultant John Zachman.

At present, most major corporations design and implement systems under a tried-and-true approach that stresses the management of technology rather than of data, Zachman said during a recent meeting of the

Data Administration Management Association here.

One of the problems with traditional approaches to information systems development is that they encourage the creation of multiple data bases within the same corporation. The absence of a uniform, company-wide data base, in turn, can lead to information inconsistency, which can undermine senior management's confidence in a firm's central computing department, Zachman said.

Another drawback with existing systems-building techniques is that they make applications extremely difficult to revise and thus diminish a company's capacity to adapt itself to changing corporate needs, Zachman said.

To address the twin problems of data inconsistency and organizational inflexibility, businesses need to establish "one central reference control for their data, just as they have already done for their other key resources like cash and people," he said. "The central reference control doesn't have to be physical, only logical."

Companies also need to identify the various types of data they use and all the corporate functions that depend on that data, the IBM business systems-planning consultant added.

If firms exhaustively inventory and categorize their data and the business functions to which it corresponds, they will eventually be able

to eliminate all information inconsistencies and make themselves highly flexible to change. But to achieve these long-term benefits, companies first must pay a high up-front price in the form of greatly increased software development costs.

Thus, many major U.S. corporations now find themselves at a critical juncture in the evolution of their systems-related activities. Should they continue to stress the management of technology and stick with traditional systems-building techniques that sacrifice long-term benefits for short-term cost savings? Or should they make the transition to data management and adopt a new systems development approach that demands a high initial outlay but provides long-term paybacks?

The question of whether to pursue a short-term or long-term system development strategy ranks as "the most significant issue now facing senior American management," Zachman said. "Who would have ever believed that the most important question confronting top executives would turn out to be a DP issue?"

Although Zachman stopped short of advocating one systems development approach over the other, he urged corporations to be aware that an alternative to traditional short-term management strategies at least exists. He also stressed the importance of choosing rationally between the short-term and long-term management approaches.

"In some cases, it may make more sense for a firm to choose the short-term option," Zachman explained. "In other cases, the long-term option may make more sense. But either way, a company's choice has to be rational and informed."

The existence of an alternative to traditional systems-building techniques will probably be recognized first by a corporation's technical personnel rather than by its top executives. "So it's incumbent upon DP departments to communicate the need for long-term systems planning to upper management," Zachman explained.

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Gaudet Receives Hopper Award

TORONTO — The 1983 Capt. Grace Murray Hopper Award for meritorious service, the highest award presented by Women in Information Processing (WIP), has been presented to Germaine Gaudet, a consultant with Datacrown Information Center.

Gaudet began her career in 1976 with the Steel Co. of Canada and was later employed by Texaco Canada, where she was responsible for graphics products.

In addition to her present duties at Datacrown, Gaudet teaches data processing courses at Centennial College and is a frequent guest on radio talk shows. She was recently the featured guest on *Networking Women*, which aired throughout Canada on television. In 1982, she founded WIP's Toronto Forum and helped organize a major region of WIP in the North Central U.S.

Configured Around Major Metro Areas

DP Net to Find Missing Children in the Works

By Katherine Hafner

CW Staff

SHERBURNE, Vt. — Kenneth Wooden believes that the responsibilities of an investigative journalist run deep. For Wooden, in fact, the commitment to his subject matter has become a full time mission.

The subject? Missing children.

The mission? To create a national child victim network that would help locate them.

It is estimated that a million children between the ages of one and 17 are reported missing each year. Most return unharmed, but others are victims of violence and sometimes murder.

Wooden has many horror tales to tell. He has written two books, one on child abuse in institutions and another on foster children who became victims of the 1978 Jonestown mass suicide. Wooden is currently working on a third book, *Prey — Missing and Murdered Children*, the result of five years of research.

The computer network Wooden is planning together with George Gallup Jr. of the Gallup Poll would be configured around three national corridors encompassing about 26 major metropolitan areas in which missing children are most likely to be found. Wooden said the network will replace antiquated means that currently exist for locating missing children.

The network's administrative headquarters will be here, but the central data base will reside in an undisclosed section of the country for what Wooden calls security reasons.

"Our strategy is to look for their [murderers'] fingerprints," according to Wooden. "And as far as I'm concerned, they're as large as elephant

footprints.

"Our system is based on an informed concept," Wooden explained. "We have a very surgical approach. It's not emotional."

In its initial stages, the \$3 million project will be configured around a Hewlett-Packard Co. HP 3000 Series 44 superminicomputer with a multi-point network consisting of four lines serving the four different sections of the nation. Each of the four lines would serve five to seven offices or police stations, and each line would have a capacity for 15 HP 2624B terminals and dot matrix printers.

The system will utilize Kinex

Corp. modems transmitting at 4,800 bit/sec and managed by a Kinex network management system.

Accessible on a 24-hour basis over dedicated AT&T lines, files on the network would carry descriptive data for missing children, such as height, weight, hair color and identifying marks.

For funding of the project, Wooden has turned to the private sector. He has so far received money from Ralston-Purina Co., Westinghouse Electric Corp., Atlantic Richfield Co. and Eli Lilly & Co. Wooden has also appealed to the White House, which he hopes to see generate further private funding.

If all goes smoothly, Wooden said, the system could be on-line by Labor Day.

Why is Wooden doing this? Wooden, who has four children himself, said his interest in missing children began several years ago when after writing his books on child abuse, he discovered a "huge national cobweb" of missing and murdered children and resolved to take action.

"I have a basic philosophical belief that if you make a living writing about this, then you are obligated to do something about it," Wooden said. "I can't file stories about beaten and murdered people and just walk away."

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Firms Announce Data Service On DP Info

DELRAN, N.J. — Data Resources, Inc. and Datapro Research Corp. have announced a data base service containing information about computers, software, peripherals and the companies that market those products.

Called Datapro/Online, the service provides on-line access to the Data Resources data base containing information drawn from Datapro's files of user surveys and other statistical, vendor and product information about computers and peripherals.

The software data base contains reports on over 10,000 software systems, products and companies, a spokesman said.

Subscribers can inquire directly about certain product features or correlate data in various categories using tools provided by Data Resources. The data base is available through Data Resources' Drinet or through common carriers. Prices vary according to use, according to a spokesman.

Datapro is located at 1805 Underwood Blvd., Delran, N.J. 08075.

Corporate Involvement Key to Getty's DP Success

By Tom Henkel
CW Staff

LOS ANGELES — What is a DP manager without a room full of computers? A lot more effective, claims one executive who proudly states that after six years of planning, he no longer has to walk through a computer room every morning.

John Mika is manager of Corporate Information Services at Getty Oil Co. When he took the job back in 1977, Getty's data processing operation spanned four data centers and barely filled corporate needs. Confidence in the DP services department was at a low ebb.

Today, Getty has made a complete reversal, according to Mika. Top executives have not only renewed their

confidence in Getty's corporate information services — they have become a part of it.

In addition, the Getty computer systems, which include two IBM 3081s, a 3033, 3031AP, two 4341 processors, four System/34s and a variety of smaller systems, have been consolidated into two data centers. Most of the processors are connected via IBM's Systems Network Architecture (SNA).

Major systems formerly located in Getty's Los Angeles and Denver data centers have been consolidated into the Tulsa, Okla., and Houston data centers. Top DP managers are still in Los Angeles where they do not actually see the hardware on a day-to-day basis.

"The computer room itself has become a very mundane place," Mika noted, adding that most of his job involves dealing with people and issues, more than actual hardware.

The secret of Getty's success, Mika maintained, is corporate involvement. In addition, the DP department is treated exactly like other departments in the company with no special favors handed to the DP specialists, he said.

When Mika, who has held various engineering and high-level managerial positions with Getty, accepted his current job as manager of corporate information services, he immediately set up a series of steering committees.

The steering committees were

comprised of vice-presidential-level executives representing various departments within the company. The committees were told to study various aspects of the Getty computer system, draw conclusions and report to a senior-level committee comprised of Mika and Getty's top executives.

The idea was to involve users of Getty's systems in how their respective systems were to be focused. Prior to 1978 when the steering committees' meetings were instituted, representatives from Getty's DP operation would work with in-house users to plan DP services.

Rebuilding Faith in DP

DP staff members often worked on the assumption that the users' lack of technical knowledge made it impossible for them to define their needs. The technicians then proceeded to develop the software the user "really" wanted — a process that usually failed. User respect for the DP department plummeted, recalled Herbert S. Chaplin Jr., manager of corporatewide projects.

The addition of the steering committees was the first step to rebuilding confidence in DP services. However, there have been other changes.

For example, Mika's corporate information services tries to avoid taking on long-term development projects. Operating on the theory that projects taking more than nine months to develop are usually obsolete before they reach the user, Mika opted to develop large projects in smaller, more manageable subgroups.

Secondly, corporate information services now encourages users to enter their own data. Mika explained Getty currently has about 1,800 terminals for the 3,500 users of DP services. Most of those terminals are located in places where data is typically generated. As a result, data is entered faster and with fewer errors, Mika said.

SNA Access

With most of Getty's financial operations centered in its Tulsa facility and scientific operations being handled at the Houston data center, users access both systems via IBM's SNA. The SNA application features a complex rerouting system which allows users to access systems via a variety of paths, Mika explained.

The secret of the SNA network, according to Mika, is to keep in mind that the user does not care what kind of system he is using, or where it is located. The user wants information, and he should be able to access as many systems as possible via his terminal.

Getty did not originally set out to build a sophisticated SNA network, he noted. But the firm decided the SNA network was the most cost-effective way of dealing with Getty users' needs, noted T.J. Spencer, manager of facilities, communications and systems engineering. Getty is planning to add satellite communications, probably between its Los Angeles and Tulsa facilities, to augment its current terrestrial communications system.

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Vendors Must Expand Services

Maintenance Agreements Face Changes: Study

By Bob Johnson

CW New York Bureau
MOUNTAIN VIEW, Calif.
— DP managers can expect changes in hardware and software maintenance agreements, as well as more customer service-oriented benefits, according to Input, a West Coast information industry researching firm.

In a recently released report on "Key Service Trends and Issues" in computer maintenance and field service, Input said that because of the decrease in computer hardware costs and the mounting resistance by users to maintenance cost increases, vendors must expand the customer services they offer and make new plans to offset this growing trend.

"Users' resistance to changes in field service costs have now reached the point where single-digit year-on-year increases have become the norm. This substantially reduces the growth of vendor service revenue, unless alternative revenue sources are found," the Input study said.

The continuous drop in equipment price is causing vendors to feel a considerable amount of pressure from users, Input stated. The company noted that performance ratios and maintenance charges have long been a fixed percentage of equipment cost, and these costs are plummeting. At the same time, product performance and reliability is increasing, causing users to voice appeals to diminish maintenance fees.

Graham Kemp, an analyst at Input, said, "If you go back a few years, maintenance costs have been related to the equipment's purchase price. For example, in the mainframe market, the annual maintenance costs out of the purchase price were about 2.5% to 5%. But now, hardware costs are dropping, and these percentages represent a much higher cost for the user to lay out."

Vendors Not Blind

Vendors are not blind, however, to what is happening, he said, pointing out that they have begun to cut maintenance costs and are adding productivity tools to their products, such as self-diagnostics, self-maintaining hardware, which utilizes boards that can be swapped, and customer-owned equipment parts on-site. They are also investigating the possibilities of remote servicing techniques.

The nature of field engineering will also change,

Kemp said. He claimed that the concept of maintenance stations will evolve; stations, or service centers, such as the ones Sorbus, Inc. is now installing, are set up in a central location like a shopping mall and permit users literally to bring in their hardware for repair.

Another area of maintenance in which users will see

some changes — although not great ones — is in outside software maintenance, Input's report said. However, in vendors' search for new service revenue, system software maintenance prices are highly undervalued.

As a result, these prices can be doubled with no visible impact on most end-user budgets. "This is because sys-

tem software maintenance costs are such a small percentage of user budgets," the report stated.

Kemp added that software maintenance costs as a line expense item in-house are large. But as outside line item costs, they are low. "We see a need for vendors to increase these costs," he said. "This isn't true of hardware;

users would be up in arms because hardware line costs are very high."

Vendor-maintained software is a very small budget item in relation to in-house labor costs for maintaining, upgrading and supporting software, he said.

The report costs \$540 from Input, 1943 Landings Drive, Mountain View, Calif. 94043.



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Attendees Seek DSS Answers, Not More Info

By Paul Gillin
CW Staff

BOSTON — The Third International Conference on Decision Support Systems (DSS) held here late last month failed to shed much light on many of the fundamental problems that users are facing, according to conference registrants interviewed by *Computerworld*.

Interviews with six attendees, most of whom work

outside the DP department, indicated that DSS is a topic of intense interest, but that the conference and the vendors are responding to their needs with tools that generate more information rather than with ideas for using the information.

While most attendees indicated that the show had been of some value, several left with their most critical questions still unanswered.

"The vendors are giving lots of information about why their packages are user-friendly and how they're integrated, but you have to dig out what the relevance is to your function," said James Hite, manager of marketing systems and analysis at Unionmutual of Portland, Maine.

"This is more of a trade show than last year's DSS conference," said James

Burkhart, a resource analyst at Idaho Power Co. in Boise, Idaho. "Last year the speakers addressed more fundamental issues. This year the vendors are saying, 'Here, I have hot users who wrote me these great recommendations.'"

One attendee who had been present at the 1981 DSS show commented, "I've found there's a lot of emphasis on tools without anybody

asking why they're using them. It seems they've gone backwards," said Cyril Brookes, a consultant and professor of information systems at the University of New South Wales in Australia. "I don't see that there's any maturity in the outlook of many designers. They are throwing information at people without an idea of how to use it."

J.N. Kotanchik, a senior economic specialist in the Product Economics Division of Shell Oil Co., came to the conference "to get closer to some vendors" in preparation for upgrading his department's DSS. He was disappointed to learn that "in many cases, the product doesn't match the advertisements."

But "manufacturers are trying to respond to a large spectrum of users," he said. "It's difficult to know what environments are needed. It's not really [the vendors'] fault."

Several users noted that the conference provided a much-needed opportunity to huddle with other users. "I have shared thoughts with some people about some of the [communication problems] we've had," said Martin Karl, a senior financial research analyst at Boston Edison Co. in Boston. "It's reassuring to find others who have had some of the same problems."

CP/M Meet Set for Boston Sept. 29-Oct. 1

BOSTON — CP/M '83 East, an international conference and exposition for the CP/M industry and users, will be held at Hynes Auditorium here Sept. 29 to Oct. 1.

The conference is sponsored by Digital Research, Inc., developer of CP/M.

The conference program will feature nearly 100 work sessions. Admission to the conference is \$25. More information is available from Northeast Expositions, 822 Boylston St., Chestnut Hill, Mass. 02167.

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Recruiters Could Solve Problems Managers Shown Positive Side of Headhunters

By Marguerite Zientara

CW Staff

CAMBRIDGE, Mass. — Personnel recruiters may be the bane of a DP manager's existence when the manager is trying to hold onto his best people, but they can come in mighty handy when one wants to get rid of an unproductive employee.

"Have you ever asked a headhunter to get rid of someone? It works; we'll do it," said David Abrams, director of sales for the Boston-based Gray Systems Group, a high-tech recruitment firm. Abrams spoke at an informal Gray-sponsored symposium here recently.

Attendees of the symposium — including managers from Cullinet Software, Inc.; GTE Telenet Communications Corp.; Systems Development Corp.; Codex Corp.; and Stone & Webster — seemed surprised and somewhat delighted at the idea of engaging someone to hire away a trouble spot on their staffs.

But when the inevitable question — "If I'm trying to get rid of someone, why would you want him?" — arose, the answer was, "We might not." On the other hand, the source of the personnel problem could be simply a personality clash, even though the person is competent, a

Gray spokeswoman explained.

Another problem situation could arise with a merger or acquisition, after which a new middle-management team is brought in and "outplacement" services are suddenly needed for those replaced.

Protecting One's Shop

For those who are trying to keep their people, Abrams had some suggestions for preventing headhunters from raiding one's shop. The most obvious is to treat people well and offer incentives that are so good they will not want to leave.

Even satisfied workers, however, have been known to discuss job possibilities with recruiters if something sounds interesting enough. To avoid that, he suggested, managers could simply eliminate recruiters' access to workers by getting rid of the telephones in the department — a suggestion that may "not be too practical" for many shops, he admitted.

Perhaps a more realistic play would be to have a central telephone receptionist who is trained to be aware of callers trying to pirate or raid one's staff, he said.

Another telephone-oriented strategy is to randomize telephone extension numbers. "If extension 13 is a systems programmer, then as a recruiter I'd be likely to try extensions 11, 12 and 14 to see if they're systems programmers," Abrams noted.

"No one is able to protect himself wholly, but one thing you should not do is publish valuable individuals' names in corporate phone books," Abrams recommended. "Annual reports are another excellent source of information for headhunters. The reports will even have someone's picture, along with his function and job description, so I can have his image in mind when I talk to him on the phone."

Line managers who want to use a

recruitment firm to acquire new employees should take the time to give the recruitment firm the technical details and requirements of the job, since not all personnel workers have the necessary technical knowledge.

In addition, "if it takes three or four weeks after the interviewing process to come up with an offer, it's difficult to keep someone interested in your firm," Bill Striker, a Gray management consultant, advised.

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Prestel Chief Pleased With Success of Videotex

By Phil Hirsch

CW Washington Bureau
NEW YORK — A British videotex service launched earlier this year could lead to the mass market that promoters of the technology have been promising for years.

More than 2,300 personal computer owners reportedly subscribed to the new service, known as Micronet 800, during the first 2½ months it was offered by Prestel, the British videotex network. Richard Hooper, Prestel's chief executive, expects Mi-

cronet 800 to attract 15,000 subscribers by the end of its first year of operation, he said at the recent Videotex '83 conference held here.

The UK, he added, "has the largest per capita population of personal computers in the world." There are currently about 1 million personal computers installed and he expects there will be 1.5 million in six months.

Low cost, according to Hooper, is the most notable feature of Micronet, which downloads applications soft-

ware and data base information to personal computer owners. For the British equivalent of \$80, a personal computer owner can buy an interface enabling him to communicate with the Prestel network and its associated data bases.

The Micronet 800 interface consists of an acoustic coupler and a cassette storage unit that holds a software-based Prestel decoder and also accommodates downloaded applications programs.

A standard Prestel decoder, by

comparison, costs \$100 to \$150 in Britain.

Hooper pictured Micronet 800 as the model of a successful videotex/teletext service. Specifically, it is useful for a defined customer population and is offered at a price likely to attract enough customers to make the service profitable.

Hooper observed that Dow Jones, using the same basic strategy, has succeeded in marketing multiple on-line information services to owners of Ascii-based data terminals.

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Residential Use to Pick Up in 1990s Execs See Major Business Market for Videotex

By Phil Hirsch

CW Washington Bureau
NEW YORK — Business applications represent a major near-term future market for videotex, top officials of AT&T and IBM said here recently.

Delivering the keynote address at Videotex '83, Randall Tobias, AT&T's chief videotex marketer, pointed to predictions that there will be one computer terminal for every three white-collar workers in the U.S. by 1985; in 1980, there was one for every seven such workers.

Tobias, president of American Bell, Inc.'s Consumer Products Division, shared the platform with R.T. Liebhaber, IBM's director of business development and practices. Liebhaber was even more specific: The "initial opportunity," he said, "lies in the business use of videotex as it complements existing data processing applications."

Major growth in residential use of videotex will not occur until the 1990s, Liebhaber added.

In his keynote speech, Tobias said:

- "There is a significant future" for hybrid videotex/teletext systems based on integrated use of telephone/cable facilities. He refused to elaborate, but other sources have reported that American Bell has already begun talking to a number of cable TV companies about building such systems.

- American Bell is "looking at... aspects of videotex that go beyond" its current activity — such as sale of customer terminals, frame creation terminals and data base software.

- Market studies conducted by AT&T and Knight-Rid-

der Newspapers, Inc. in preparation for their forthcoming Viewtron service showed high interest in videotex-based transactional services within families earning \$30,000 or more per year; 68% of the households within this group ordered products. Also, 83% ranked videotex as a more convenient shopping medium

"The 'initial opportunity lies in the business use of videotex as it complements existing data processing applications.'"

than catalogs, stores and telephone Yellow Pages.

- Participation by many parties is necessary to make

videotex successful. Newspapers have a "key role," but the participants must include "banks, retailers and a long list of others."

Following Tobias on the platform, Liebhaber said that growth of the videotex market — business as well as residential — will be determined largely by the growth of system integrators. "We

see the role of the business integrator as catalytic to the cohesive development of the industry."

Videotex will justify itself to business users by reducing the costs of information distribution and promoting productivity gains, he added. Another effect of videotex will be its impact on ways of doing business.

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Sceptre's Price May Limit Mass Market: Exec

By Phil Hirsch

CW Washington Bureau
NEW YORK — Although the display formatting scheme that AT&T is using in the videotex terminal it introduced late last month [CW, July 4] produces superior graphics, the system will for some time not be inexpensive enough to create a mass market for teletext/videotex services.

That was one key asser-

tion made by Roy Bright in an interview during the recent Videotex '83 conference here.

Bright, who probably has more experience marketing videotex/teletext systems than anyone else, is currently managing director of Intelmatic, one of the groups promoting French videotex technology abroad. Until 1979, he was marketing director for Britain's Prestel

system.

The new AT&T videotex terminal, Sceptre, uses the AT&T display scheme known as the North American Presentation Level Protocol Syntax (NAPLPS), which delivers the quality graphics that advertisers demand, Bright noted.

But at a price of \$600, Bright said, Sceptre will not attract the mass market he believes is crucial to the suc-

cess of videotex/teletext services.

He indicated, however, that personal computers might drastically impact the economics of videotex/teletext service.

A number of suppliers on both sides of the Atlantic are marketing software and circuit boards that enable personal computers to act as videotex decoders.

For present personal com-

puter owners, the cost of these solutions is well under what American Bell, Inc. is charging for its new Sceptre terminal, according to Bright.

Decoder Capability

Bright said that he doubts the installed base of personal computers is large enough to support a substantial, sustained growth in videotex users.

But it is possible, he said, that videotex/teletext suppliers could enlarge that base substantially by offering general-purpose personal computers with decoder capability rather than decoders per se.

The price of the personal computer solution might be the same as that of the decoder, but the additional capability of the former would be another selling point.

In the course of the interview, Bright also said:

- Although the U.S. Department of Agriculture has decided not to test the "smart card" as a way of dispensing food stamp benefits, discussions are under way with U.S. financial and health organizations regarding possible use of the card. Bright said that he expects the J.C. Penny Co. retailing chain, which recently took over an experimental videotex service in Minnesota and North Dakota, based on French technology, to field-test the smart card.

- Development of an interface allowing the low-cost French Minitel terminals to access the Ascii-encoded data bases of Automatic Data Processing, Inc., a U.S. time-sharing company, is the forerunner of many similar efforts. Minitel's appeal to business users should be greatly increased as a result, he added. The terminal costs about \$500.

- A new Minitel, able to access data bases that employ alphabetic formatting — NAPLPS, for example — is due in the second half of 1984. The price is not yet fixed, but Bright's rough guess is that it will be about 40% more than the present version.

- The French telecommunications administration is well on its way to installing three million Minitel terminals in France by 1986. These terminals can access private data bases, as well as on-line telephone directories. In those parts of France in which the directory service has not yet been established, telephone boutiques are renting Minitel for \$10 per month. The terminal includes a small monochrome screen, full Ascii keyboard and built-in modem.



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get high resolution with crisp, easy-to-read characters.

The 5410 is also surprisingly user-friendly. For starters, it has 8 programmable function keys that can be down-line loaded from a host or entered locally by the operator. These non-volatile keys are easily associated with screen labels. When the operator goes to another application and changes the function keys, the screen labels can change right along with them. There's no need to put plastic strips or messy tape on the screen.

When it comes to optioning, the 5410 features an English menu (see screen above) for fast set up. The operators don't have to flip DIP switches or figure out complicated codes. They'll also appreciate the 5410's character attributes which include blinking, boldfacing, underlining, non-displayed and reverse video.

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Alphamosaics or NAPLPS? Marketing Battle Continues

By Phil Hirsch

CW Washington Bureau

NEW YORK — One of the most difficult decisions confronting prospective users of videotex and teletext services is whether to acquire terminals employing an alphamosaic or alpheometric display formatting system.

For years, promoters of the two display technologies have been engaged in a spirited, and often bitter, marketing battle. Britain's Prestel system is based on alphamosaics, while the competing systems being promoted by AT&T, France and Canada support the North American Presentation Level Protocol Syntax (NAPLPS), an alpheometric formatting system.

The latest stand on that issue was taken here recently at Videotex '83 by the head of RCA Corp.'s Digital Systems Research Group. Larry Ryan's presentation at the conference could signal an intensification of the battle, since it comes at a time when interest in videotex/teletext — particularly for business applications — appears to be growing and prices of key components are dropping.

Ryan concluded that NAPLPS is a better buy because it provides a considerably better display for only a small increase in manufacturing cost. Furthermore, he said, this cost differential will decrease.

Specifically, NAPLPS provides far higher resolution, offers a much larger choice of colors, allows displays to be animated and provides a number of other features beyond the capabilities of alphamosaics, he said.

"In the U. S. market," Ryan said, "advertisers will be a driving force for teletext and videotex. Teletext will be wholly advertiser-supported. Shop-at-home videotex applications call for accurate product drawings. NAPLPS does a good job in these areas while alphamosaics do not."

Largely because NAPLPS requires a more sophisticated display microprocessor (8-bit instead of 4-bit), plus considerably more read-only memory and random-access memory, its manufacturing cost is higher, Ryan

said. He estimated that in 1985, NAPLPS display circuitry would cost manufacturers about \$12 more and end users \$30 to \$40 more per unit than alphamosaic systems. Ryan chose that year because he expects "half a dozen" manufacturers to be producing alphamosaic and alpheometric decoders in quantities of at least 100,000 units by then.

In 1988, when Ryan expects a new generation of decoders to become available, the price difference should be about \$4.75 at the manufacturing level and \$12 to \$16 at the retail level. Ryan thinks this differential will be reduced further if personal computers supplant NAPLPS decoders.

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U. of Texas Gets \$1 Million Gift

DALLAS — An anonymous \$1 million gift to the University of Texas will be used to establish the Centennial Chair in Computing Theory in the Department of Computer Sciences at the Austin College of Natural Sciences.

With matching funds from the Centennial Teachers and Scholars Program, the regents have established the Centennial Chair in Computing Systems in the same department.

In accepting the gift, which will help the University of Texas at Austin advance its program development in the computer sciences, University of Texas President Peter Flawn and Dean Robert Boyer agreed to raise funds for two professorships in computer science at the \$250,000 level.



Study Predicts Growing Usage of Info Centers

By Lois Paul
CW Staff

PORT JEFFERSON STATION,
N.Y. — Although personal comput-
ers are working their way into major

corporations, the findings of a recent
study suggested that after they are
installed, these systems currently are
not being used by a large number of
employees. Only 10%, at most, of the

employees at the 71 major corpora-
tions responding to a recent survey
reported that they are actually using
personal computers. However, it was
anticipated that this percentage
would increase dramatically by 1985,
according to a recently released
study by FTP, a market research firm
here.

In "Management Assessment of
User-Driven Technologies," the firm
also projected large increases in the
usage of information centers and
fourth-generation languages by
1985. Sixty-three percent of the firms
surveyed reported that they have im-
plemented an information center
within the last two years. Most (85%)
of the firms said they intend to in-
crease the use of their information

centers by 1985.

Because their centers are so young,
most of the responding companies
were unable to pinpoint specific
benefits of this technique. "The posi-
tive news is that, where a decision
can be made, very few companies
have expressed disappointment," the
researchers noted.

Another finding of the study may
explain the relative lack of visible
benefit from information centers.
The survey respondents said 10% or
less of the end users who generate
requests for development support
are using the information center.
This means that the major users of
the information center are not the
people who currently are contribut-
ing to the applications backlog.

A significant percentage (61%) of
the responding companies have had
to upgrade or acquire new facilities.
The required changes have impacted
CPUs, storage, communications and
data base management systems.

The most prevalent languages
used in the information centers are:

- For building systems — Infor-
mation Builders, Inc.'s Focus (33%).
- For model building — IBM's A
Departmental Reporting System
(42%).
- For statistical applications —
SAS Institute, Inc.'s SAS (64%).
- For financial analysis — Execu-
com Systems Corp.'s Interactive Fi-
nancial Planning System (31%).
- For querying, manipulation and
data — Focus (31%).
- For graphics applications —
Sasgraph (50%).
- For high-level programming —
Pansophic Systems, Inc.'s Easytrieve
(35%).

One potential problem area with
information centers that the study
uncovered was the negative attitude
expressed by the majority (51%) of
programmer/analysts and system an-
alysts toward this approach to com-
puting. This contrasted with the atti-
tudes of end users (76%) and top
management (66%), who were large-
ly in favor of information centers.

Queried about their use of fourth-
generation languages and/or pro-
gram generators, 66% of the 71 firms
responding to the survey said they
are using them currently. However,
72% of these firms are using these
packages to generate 10% or less of
their regular production applica-
tions. By 1985, 66% of the companies
responding plan to increase their use
of these systems. At that time, the
overall average of regular produc-
tion work being done with fourth-
generation languages is expected to
increase to 28%.

The study found that end users are
taking advantage of fourth-genera-
tion languages/generators to do
some of their own development
work in 51% of the responding com-
panies. This figure is expected to
grow to 85% by 1985.

The most widely used fourth-genera-
tion languages/program genera-
tors in use at the 71 responding com-
panies are Focus (30%), IBM's
Application Development Facility
and Pansophic's Easytrieve (21%) and
IBM's APL Data Interface (15%).

The study is available for \$90 from
FTP at 492 Old Town Road, Port Jef-
ferson Station, N.Y. 11776.

Interest Group	Percent of Companies			
	Positive To Excellent	Neutral	Skeptical To Pessimistic	Don't Know
Top Management	66	7	22	5
End Users	76	10	22	2
Business Systems Analysts	48	23	21	8
Programmers Analysts/Systems Analysts	33	19	51	7
DP Operations	27	38	30	5

Source: FTP

Management/End-User Attitude Toward Implementing an Info Center

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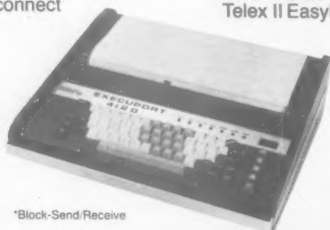
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Opportunities Outlined at Seminar

AI Seen Promoting Extension of Expert Systems

By Robert Batt

CW West Coast Bureau

SANTA CLARA, Calif. — Developments in artificial intelligence are making possible a qualitative extension in the expert capabilities of machines, a senior industry executive said here recently.

Speaking at a session on "Artificial Intelligence: Application Perspectives," during a seminar sponsored by Sperry Corp. on Computer Systems Advanced Technology, Warren McBee, director of the systems laboratory at Sperry, said that as computer hardware technology continues to advance, so will the problem-solving scope for expert systems.

"Also, the architecture and software environment of future computers, as well as their size and speed, will open possibilities for exploitation of expert systems hardly perceived at present," he added.

Future opportunities for expert systems, McBee asserted, exist in such application areas as:

- Command and control systems requiring intelligence analysis, planning, targeting and communication.

- Equipment design, monitoring, control, diagnosis and maintenance.

- Professions, such as medicine, law, accounting, management, financial services and engineering.

- The design, specification, production and verification of software systems.

"Software production is becoming the predominant cost in computer systems. Expert systems to assist in programming are under development, and there is the promise of significant improvement in software productivity," he claimed.

McBee argued that as a result of advances in hardware technology, computers have reached a level where it is practical to store the equivalent of an expert's knowledge base in a well-defined restricted field and to emulate in a reasonable time the search and pattern-matching procedures used by a human expert in solving complex problems.

"These same hardware advances have also made possible friendlier

techniques for man-machine interaction and have brought about the proliferation of computers. As a result, there is occurring a cultural change toward understanding, acceptance and comfortableness with respect to information-handling machines," he noted.

McBee said the essence of an expert system is to be found in the details of the knowledge base. The most important and time-consuming task in building an expert system is knowledge acquisition, and an important issue is knowledge representation.

"Success depends on defining a bounding problem domain on the

adequacy of the expert's knowledge for problem solving in that domain, on his ability to represent that knowledge and implement efficient, appropriate control and user interaction structures. If the knowledge base includes a significant heuristic content, it is important that a single expert be involved from start to finish," he added.

In developing an expert system, McBee asserted, knowledge acquisition is the toughest job. If the domain is too large or poorly defined, the task of knowledge acquisition may be prohibitive; therefore, it is critical to have a narrow, well-defined domain.

There are also prerequisites for experts, McBee noted. Not only must they be acknowledged experts, but they must also be able to explain their special knowledge, including facts, heuristics and problem-solving methods.

Turning to expert system applications now under development at Sperry, McBee said he is confident that much more can be done in both military and commercial applications, in such areas as air traffic control, circuit diagnosis, design of very large-scale integrated circuits, equipment fault diagnosis, computer configuration selection and speech understanding.

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System Manages Warehouse For Copy Machine Maker

PORT CHESTER, N.Y. — One of the nation's largest manufacturers of copying machines is now providing 24-hour response to customer orders after installing an on-line warehouse management system in four of its warehouse/distribution centers.

"It used to take us as much as a week to respond to customer orders," said Rod Garges, management information systems project manager for warehouse and field operations at Savin Corp. "Now, any order that is received at our warehouses before noon is picked and shipped that day, and the customer gets delivery the next day," he added.

Computerization of its warehouse

operations in Tallman, N.Y., Cerritos, Calif., Dallas and Chicago has also allowed Savin to eliminate the need for its 25 branch offices throughout the country to maintain local inventories of copying machines, paper, inks and other office supplies.

Initially, Savin began automation of its warehouse operations with an eye toward improving inventory control, order fulfillment processes and the record keeping associated with machine serial numbers and chemical lot controls. However, once the copier manufacturer had installed its first on-line warehouse management system, "we realized that its efficiency would enable us to improve significantly the logistics of our entire distribution operation and possibly our manufacturing processes as well," Garges said.

A task force was established in 1979 to explore the possibility of applying computer technology to the operation of Savin's warehouses. After evaluating a wide variety of systems options, the group chose a combination software/hardware system from Lexington, Mass.-based Distribution Management Systems, Inc. (DMS).

Warehouse Model Created

Utilizing DMS' modular application software approach to warehouse management, Savin created a mathematical model of its warehouse in a specially configured Digital Equipment Corp. PDP-11 computer system provided by DMS. This enabled warehouse supervisors to put away and pick products efficiently based upon a variety of criteria relating to their anticipated demand, size, weight, date of manufacture and other characteristics.

Each warehouse storage area is described and recorded in the system, which keeps accurate records of all stored products. As products are received from suppliers, the system automatically assigns storage space and prints "put-away" tickets. Also, warehouse inventory records are automatically updated.

Similarly, when customer orders are transmitted each morning from the company's IBM 4381 computer system here to the DEC systems at each warehouse, the warehouse systems match those orders against inventories and product locations and print out picking and shipping documents that will result in the most efficient assembly of each order.

Warehouse computers also print carton labels, update inventory levels to reflect shipments and store detailed order data for transmission back to the computer here for billing purposes.

The only manual record-keeping procedure that is still required at each warehouse is the recording and entering of copying machine serial numbers as the machines are received and shipped. However, Savin is already working on the development and implementation of a bar code identification and reading system that will interface with its DMS warehouse management system to eliminate this manual process.

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The 6600 COM printer shown with tape drive option.

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*Compared to standard fiche at 60 seconds on the Bell & Howell 6700. Test results are available on request.

**PDP-11 is a trademark of Digital Equipment Corporation.

When Is a Mainframe Necessary?

Q The delineation between minicomputer and mainframe processors is becoming obscure, particularly if you talk with a minicomputer sales representative. Yet something happens in the real world when a large mini or multiple minis are used with a large number of terminals, when the size of the files becomes large and when the transaction rates go up. A mini just won't handle all of the functions built into the same software designed for mainframes.

Rumors are surfacing of DP directors getting into hot water when they select minis to replace mainframes and performance does not live up to promised expectations.

Is there more to computer architecture than the public is being told by minicomputer salesmen and ad campaigns? Is a 4M-byte mini the same as a 4M-byte mainframe? What measurement techniques should be used?

The bottom line is: At what point should a mainframe be used?

A The bottom line for any computer system is throughput. Some can accommodate more sophisticated software and more terminals than others.

A 4M-byte mini is a large, powerful computer by any name. But more information is needed to determine its throughput. You'll have to look at its million instructions per second rating, ports, word size, the characteristics of the operating system and so on to analyze throughput potential.

Managers who find themselves in hot water probably overlooked hardware capacity and systems requirements planning.

The "mini vs. mainframe" question is, or should be, a moot point. Gertrude Stein anticipated this when she said "A computer is a computer is a computer..." Or was that "A rose is a rose..."?

Q We market an on-line system for processing health claims and make constant revisions. Because of the revisions, we feel it is necessary to define the difference between enhancements and a new system in our standard contract. Enhancements are included with the standard maintenance agreement, but a new system involves renegotiation.

Most of our clients are not DP-oriented, so they tend to feel that any change is an enhancement and part of the service.

Can you suggest any definitions that can help us?

A The difference is best explained in the context of the four stages of the system life cycle: birth, development, production and death. Systems are dynamic and require enhancements during the production stage so they can continue to serve the DP and information needs of the company. The accumulation of system modifications eventually takes its toll, and the information system becomes so cumbersome that it is no longer operationally or economically effective. It dies (last stage) and is reborn (first

stage) as a new system.

An enhancement is integrated within the framework of an existing system. The design of a new system is in no way constrained by the design of the old system. A new system involves a fresh look at system requirements.

If you develop a functionally adjacent module that is not within the scope of the original system, it is neither an enhancement nor a new system. As such, it is a charge item and can be sold separately.

Q I have been a programmer for almost three years. At first I enjoyed the detail work, but now I realize that I would like to pursue [sic] a computer mar-

keting career [sic] and work with more global ideas.

I have no sales experience; however, I do have an MBA. I haven't [sic] had much success in achieving this goal. Any advice?

A The computer market is fiercely competitive. Vendors are seeking people with the ability to sell themselves and their product.

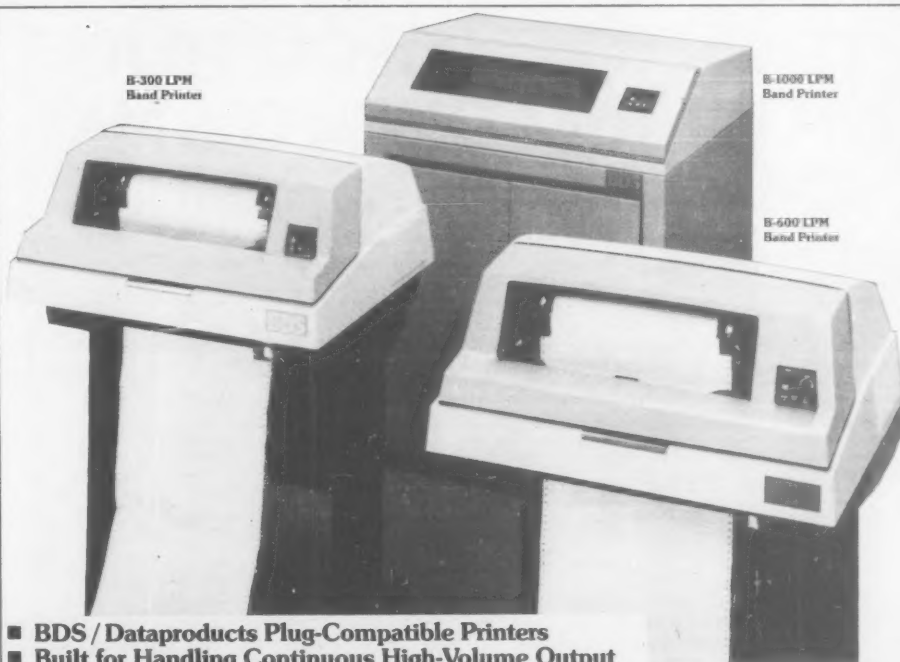
Consistent with this objective, vendors want people with good verbal and written communication skills. In that regard, you'll need to buy a dictionary before potential employers will take you seriously.

A misspelled word in an application raises two questions: Is this the

Turnaround Time By Larry E. Long

applicant's best shot? Does the applicant really care?

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.



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Customer Service, Profits Improved Business Graphics Key to Bureau's Productivity

By Jim Bartimo
CW Staff

CHICAGO — A Dallas-based service bureau has achieved increased productivity by using business graphics for financial management, computer usage billing and capacity planning.

The story of how this productivity increase came about was the subject of a session on business graphics at the National Computer Graphics Association's annual meeting held here recently. Roger Taylor of the Computer Services Division of Electronic Data Systems Corp. told how his department brought graphics to its company.

In addition to improving customer service and profits, business graphics have been a success because, unlike a thick computer printout, "you can take graphics right into the boardroom with you," Taylor said.

One key to success is recognizing the needs of the data center's management. "A data center manager is responsible for a lot more than hardware," Taylor said. "He's also in charge of strategic planning."

Strategic planning has improved because graphics clearly portrays trends and high-expense areas.

The clear understanding of the bottom line has also given different division managers a common goal,

according to Taylor.

The charts and graphs used by the service bureau are both read and produced by upper management. Graphics formats are easily called up over a network through electronic mail. "Our vice-presidents don't have time to learn from a 3-in.-thick manual — all they do is read and push two buttons," Taylor said.

Another area of high productivity is billing inquiry. In this area, graphics are used as a trouble-shooting tool, for "what if" rate setting and to build a bridge between users of the service bureau and the computer service providers, Taylor claimed.

"Our capacity planning system is

our most powerful and significant use of business graphics," Taylor said. This use of graphics has helped to reduce the high incidence of swapping computers and has helped justify upgrades when they are needed.

The success of graphics in these three areas has made the company's senior management more computer-literate. "A year ago, you wouldn't have seen a terminal on an executive's desk," Taylor said. "Now they all have [IBM] 3279s for graphics retrieval and electronic mail and are beginning to use them for other applications."

Taylor warned that no user should fall victim to vendor claims when looking for a graphics system. "There is no total solution from any one vendor," he said, so users will have to diversify their investments.

In the future, Electronic Data Systems will probably use IBM Personal Computers as graphics terminals to add graphics to an IBM Systems Network Architecture/Synchronous Data Link Control network.

American Bell Creates Institute For Management

MORRISTOWN, N.J. — American Bell, Inc.'s Advanced Information Systems has created the Communications Management Institute to offer public courses on management skills in the telecommunications industry.

The institute will offer a program of generic skill development courses for operational levels of customer management. Two courses will be offered in the third quarter of this year: "Information Distribution Management (Networking for the '80s)" and "Office Information Management Resources (Where Did the Future Go?)."

The first course covers planning, implementation and management of an office network. The second offers simulation workshops in assessing the needs of the office, overcoming employee resistance to the new technologies and educating employees on the positive results of office automation.

All courses will be offered at Callaway Gardens near Atlanta. "Information Distribution Management" is a four-day course priced at \$920; "Office Information Management Resources" is a 3½-day course priced at \$800.

More information is available from American Bell's Advanced Information Systems through P.O. Box 1955, 100 Southgate Pkwy., Morristown, N.J. 07960.

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"I Admit I Embezzled the Money, But I Plowed Every Cent of It Back Into the Economy."

Journal to Aid Assessment Of Computer Use in Schools

LUBBOCK, Texas — The Haworth Press, Inc. announced it will be producing a quarterly journal that will help educational professionals assess and evaluate the new applications of computers in school.

Called "Computers in the Schools," the journal is intended to fill the gap between the magazine literature and research-oriented disciplinary journals.

The quarterly publication will be headed by D. LaMont Johnson, Ph.D., who is the coauthor of "Com-

puters, Teaching and Learning."

Explaining the publication's raison d'être, Johnson said, "There is a need to begin sorting everything out — to begin testing our hunches and intuitions through research. Authors need to begin looking down the road at long-range implications before plunging headlong down some dead-end paths."

The journal's first issue is scheduled to appear in the spring of 1984. An "Instructions for Authors" brochure can be obtained from Johnson at 6905 Evanston, Lubbock, Texas 79424. Information on subscriptions is available from Haworth at 28 E. 22 St., New York, N.Y. 10010.

Series to Focus On Software QA, Verification

LOS ANGELES — The Education Foundation of the Data Processing Management Association (EFDPM) will be holding a series of two-day seminars on software quality assurance (QA) along with approaches to verification and validation.

The programs will be presented in Las Vegas on Aug. 15-16; San Francisco on Aug. 18-19; and in Anaheim, Calif., on Aug. 22-23.

Dr. Raymond J. Rubey, technical director at Softech, Inc., will chair the three programs.

The seminars will focus on solving the problems of reviewing design inputs and processes, preparing test plans and procedures, establishing audit trails for problem fixes and follow-up and managing software change control boards, according to Rubey.

More information on how to register for the seminars can be obtained by contacting EFDPM Seminars, Department SQA, P.O. Box 3608, Torrance, Calif. 90510.

Deltak Offers Training Series On Graphics

NAPERVILLE, Ill. — Deltak, Inc. has announced a multimedia training series to explain the procedures necessary to design individual business graphics and entire graphics applications.

"Designing Business Graphics Applications" features industry expert James Martin and is aimed at graphics users, systems analysts, information center personnel and applications programmers.

There are no course prerequisites, but a nontechnical understanding of basic DP concepts is helpful, a Deltak spokeswoman said.

The series includes two courses: "Graphics Systems and Applications" and "Designing Business Graphics."


Courses cost an average of \$50 to \$125 per course per month, depending on volume.

Courses can be purchased for \$1,750 per course from Deltak's East/West Technological Center, located at 1751 W. Diehl Road, Naperville, Ill. 60566.

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"USING SAS"(82)

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"Thanks to Tandem's comprehensive set of easy-to-use programmer tools, application development was remarkably smooth for an operation of such national scope; the system went on-

line exactly on schedule and, without the slightest problem.

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Cheaper, More Reliable Than Battery Backups

UPS System Saves Insurance Firm in Power Loss

NORCROSS, Ga. — An uninterruptible power supply (UPS) that uses lines from two separate power stations instead of the commonly used battery backup systems will save an insurance firm an estimated \$550,000 during 1983.

In addition, the UPS system is reportedly more reliable than conventional battery backup systems. Installed in the 18-month-old Travelers Insurance Co.'s Data Center here, project leader Viateur Beaudreau recalled the UPS had an early workout when a Jan. 4, 1983 electrical fire knocked out power for several companies located in the Atlanta suburb's Technology Park section.

Power was out for better than four hours, and several companies with battery-powered UPS systems wound up shutting their computer systems down "gracefully" when their battery power ran out. One firm was down nearly six hours, but Travelers was able to keep its five IBM 3080 series processors running because it was able to switch to an alternate power supply, Beaudreau said.

The two power lines are monitored by a super switch at The Travelers' Data Center which senses a circuit failure within 33 msec. Within 80- to 90 msec, the switch transfers power to the other line. Motor generators are installed to maintain "ride-through" power during switching. The generators also compensate for

power disturbances too brief to trigger the switch, Beaudreau said.

"The solution was a joint effort by The Travelers; the consulting engineering firm of Jeffers, Barnett & Associates in Norcross; K/W Control Systems, Inc. of Middletown, N.Y., the governing board of Technology Park/Atlanta; and Georgia Power Company," explained Rodney Mattison, assistant director of The Travelers' Norcross facility.

'Innovative Alternative'

"We came up with an innovative alternative to conventional battery-based uninterruptible power supplies," Mattison explained. "The system is low cost and virtually maintenance free. In addition, unlike battery systems, The Travelers' UPS does not require environmental controls, Mattison said.

The Travelers relies solely on outside power to run the DP operation. The motor generators were installed only to supply power for a short term, not power the system for extended periods. "The system was designed to have power lines from two substations; an incident where both power lines go down simultaneously is likely to occur rarely — once in a decade," Mattison noted.

Mattison added The Travelers' Data Center is one of the largest in the Southeast with two IBM 3081 processors, three 3083s and one 3033

churning out more than 500,000 transactions per day. In addition, laser printers produce an average of 200,000 mailings per day to customers, including 97,000 claims checks. The Norcross center is part of The Travelers' countrywide DP facility which communicates, via satellite, to the company's Hartford, Conn., DP facility. More than 350 reports are transmitted daily, Mattison said.

The Travelers' UPS is part of an experiment between Georgia Power and Technology Park/Atlanta. This fall, Georgia Power will build a dedicated, underground power line for the Technology Park area. At that point, Travelers will use that new power supply, the existing power supply for Technology Park and its backup residential power supplies. The yet-to-be-installed power supply and the existing Technology Park power supplies will be automatically switched. The third residential power supply will be used as a backup and will be manually switched on, according to Dave Sowers, vice-president of data services.

The problem with the current two-line system, Sowers explained, is that if one power supply is down for several hours, The Travelers becomes very vulnerable should the other power supply fail. If the second power supply goes down, so does The Travelers. With a third power line, the company can always maintain

two active power lines for its systems. If one of the main power lines is down for more than several hours, the backup power supply can be manually switched on, Sowers said.

Power lines to The Travelers' Data Center feed into the super switch. This is a 1,600A dual-supply transfer switch developed by K/W Control Systems. Power from the transfer switch feeds into two types of motor generators. When the power shuts off, the rotational inertia of the motor generator is used to supply up to 250 msec of ride-through power to smooth out the power supply while the lines are being switched, Mattison explained.

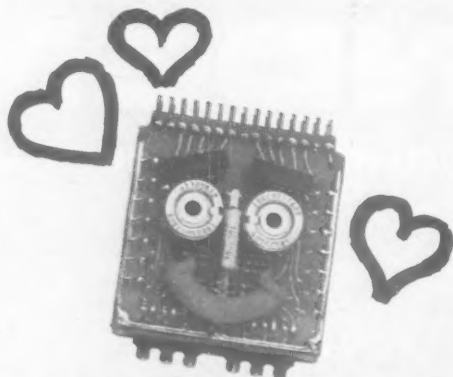
Static UPS Considered

In developing the UPS system, The Travelers considered several alternatives, including a static UPS using batteries for backup.

"The static UPS system has several disadvantages," noted George Lukens, DP director for The Travelers' Hartford office. "First, the batteries and UPS equipment require a great deal of space and special ventilation. More important, however, the system we developed costs less than the conventional battery system and achieves equal or better results," Lukens said.

Lukens said The Travelers is the largest data center in the country to use the super-switch UPS approach.

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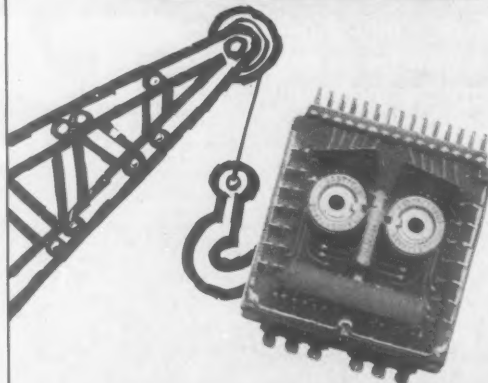
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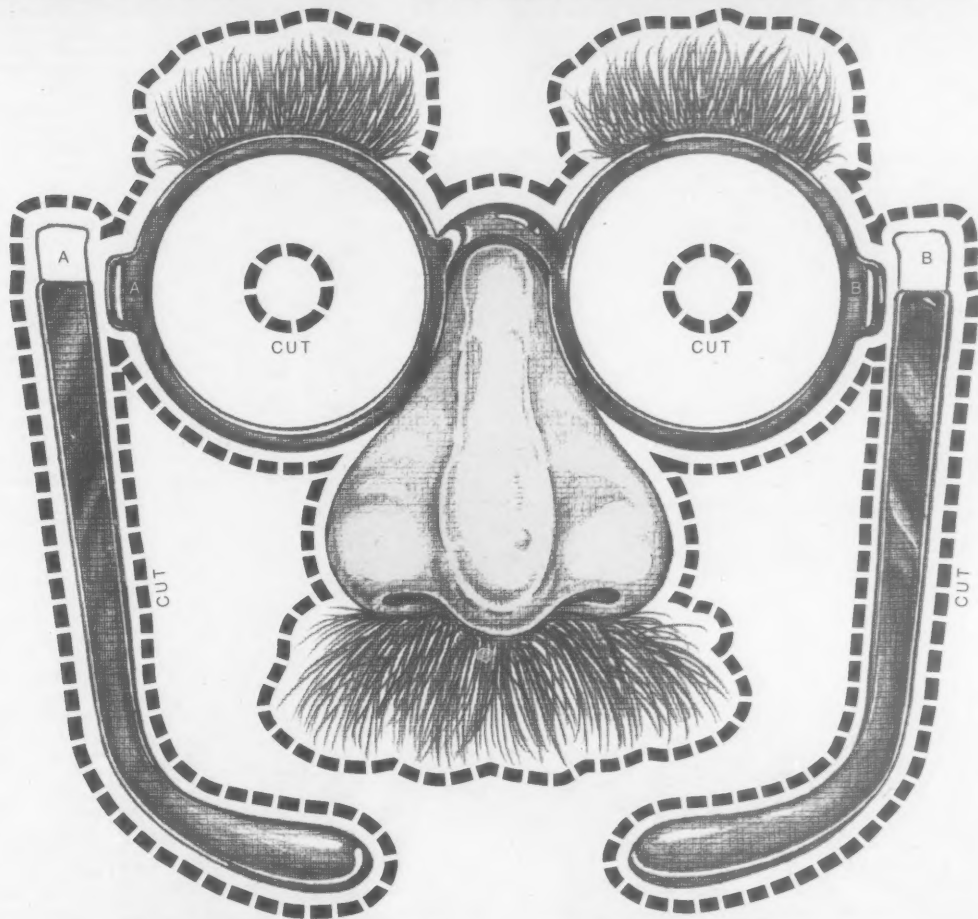
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1. *Datapro*: "User Ratings of Proprietary Software-COMPUTE" November 1982. 2. *Computerworld*: December 20, 1982.

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Terminal Maker Streamlines Info With COM

SFOKANE, Wash. — A company with growing pains here recently discovered that computer output microfilm (COM) brought some relief from the confusion that is often a by-product of growth.

ISC Systems Corp., a manufacturer of microprocessor-based on-line data terminals for financial institutions, had problems. The DP department did a good job of col-

lecting information and generating reports. But what happened after that was anyone's guess. When the reports worked their way to the firm's product group, which comprises the manufacturing and engineering divisions, they were in the form of massive reams of computer printout. Important information was getting lost and projects were being delayed, Shelly Monroe, a

manufacturing analyst with the firm, recalled.

If information was not available through standard channels, employees would try to get it through informal channels. For example, whenever an employee became aware of a report that contained one piece of helpful information, he would ask the DP department for the entire report, without trying to find out if there

was a more efficient way of getting the desired information. Consequently, the DP department's report routing list grew to an unmanageable length, Monroe said.

There was also a filing problem. Historical reports were kept at the discretion of each department head and in some cases, at the option of individual employees. While some filing systems were efficient, others were not. In

many cases, the cost of storing and retrieving information outweighed its value, Monroe recalled.

Determined Problem

The firm determined its problems centered around inefficiency in placing the right information in the right place at the right time rather than on a lack of information.

In August 1982, ISC began evaluating COM. The firm started using microfiche reports about five months later. The COM reports are produced by Comtex, Inc., a firm based here that takes output tapes from ISC's Datapoint Corp. processors and produces COM reports according to ISC specifications. The report specifications are held in a separate formatting program, Monroe explained.

But before the COM system could be implemented, some details had to be resolved. How reports were being used was a key issue. Analysts familiar with the firm's reporting systems contacted each person on the DP department's report routing list. Each person was asked how he used the information. Reports no longer needed were canceled, and users were encouraged to share reports whenever possible, Monroe said.

Next, one or two people in each department were selected to distribute all reports within that department. This, Monroe said, simplified the DP department's distribution efforts and established an expert in each department who knows where reports are going, Monroe said.

ISC determined that daily reports, which averaged three or four pages each, were least costly if printed on paper. But the firm decided it could cut its printing costs by 70% if it put weekly and monthly reports on COM, according to Monroe.

Initially, the firm purchased microfiche readers and began distributing 10 of its approximately 50 regular reports on COM. Every few weeks, a few more reports were added. By putting one fiche reader in a central location in each department, ISC was able to cut down further the number of reports it had to issue, Monroe explained.

ISC has expanded the use of microfiche to include source document filming of closed purchase order files. The original purchase orders and all supporting documents are filmed and destroyed by Comtex. Monroe estimated that each COM report takes up about 20% less space than the paper versions of the reports.



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Airline Gets Applications Off the Ground With Help Of Program Preprocessor

LOS ANGELES — An airline firm here has been able to get its IBM IMS-based applications programs off the ground with the help of a Cobol program preprocessor.

Early last year, Flying Tigers Airlines acquired a major accounts receivable package for the management of billing and collections. Planning for the installation included extensive modifications to suit specific needs of Flying Tigers, with particular emphasis on the cash and obligation portions of the overall system, which is strongly dependent on extensive IMS data bases, according to Kees Steeneken, project manager in the DP department.

These data bases involve mostly Hidam files, two cross-reference data bases and four secondary indexes. The total data volume consists of approximately 900 3350 cylinders.

The overall plan called for the development of at least 12 major IMS programs, about half of which would be one-shot executions providing loading facilities, data conversions, file abstracts and so on, Steeneken said. The remainder were to be full production systems for both on-line and batch applications.

Faced Major Obstacles

Flying Tigers faced major obstacles at the outset of this effort, stemming from the fact that current DP projects had largely exhausted the IMS talent pool from which to draw the necessary staff. This applied as well to the DBA facility, which would have little time available to provide development and debugging support to the programming team.

Together, this meant that a significant IMS training effort would have to be mounted and that in some manner, a large degree of data base administration involvement would have to be circumvented.

These obstacles were seen as the source of serious start-up delays in the accounts receivable system project. However, Flying Tigers had recently acquired a Cobol program preprocessor known as IP3 — IMS Programmer Productivity Processor from Computing Productivity, Inc. of Waitsfield, Vt. This package provides nonprocedural Cobol verbs for data referencing, which are employed in the application program where necessary to satisfy its data needs.

The IP3 preprocessor uses the specification information in the verb to generate an IMS data division portion for the program and all of the required IMS/Cobol for its procedure division. These generated Cobol statements provide not only the CALL statement for reaching IMS, but the necessary control logic, as well as status code testing, Steeneken said.

Flying Tigers found that an immediate advantage of IP3 is its strict adherence to Cobol syntax and semantics. In addition to this, the IP3 preprocessor allows the programmer to deal only in the Cobol data names and the

business problem.

There are no data names that need be created to program IMS, so the programmer is not obligated to shift his intellectual focus from the business problem to the IMS programming problem and back. It also completely separates the programmer from not only the structure of IMS, but also from the dependency structure of the data base architecture.

Given an IP3 statement, the IP3 preprocessor generates the entire procedure division portion of the required IMS interface in Cobol. Thus, the programmer writes only business data names and uses statements that directly reflect business data processing aspects of the problem. IP3 produces statements that execute the necessary loops; observes limits and test status codes; and does all of this in the form of bug-free native IMS/Cobol. Flying Tigers discovered that an experienced Cobol programmer can learn IP3 in a matter of hours, according to Steeneken.

IP3 creates all of these IMS programming components — none need be provided by the programmer, Steeneken said. Moreover, none of this needs to be provided by the data base administrator for an inexperienced IMS programming staff. And since IP3 generates the data division bug-free, there is little call for DBA assistance in debugging the IMS data references, both in the procedure and data division portions of the program, he said.

In the accounts receivable system project, Flying Tigers discovered that IP3 greatly reduced its anticipated start-up delays and yet found that there were no limits on its project effort due to IP3, Steeneken said. Not only was IP3 able to carry out everything that was required in terms of data base referencing and manipulation, the airline also discovered that there were a number of capabilities that were extremely difficult to formulate in native IMS/Cobol.

The project team debugged their IMS programs at the IP3 level. They discovered that reviewing an application in its data referencing context was far simpler in terms of the IP3 statement than the IMS counterpart version could ever be, Steeneken noted. Such statements are always clear in their intent, and their modification is simply a matter of changing the cogent part.

Because Flying Tigers had a limited DBA capability available for the project, the generation of complete data division requirements for data referencing allowed the project team to avoid the extensive CALL-pattern planning that is usually carried out by the DBA, Steeneken said. The limited availability of a DBA resource had virtually no effect on the project overall.

At this point in the accounts receivable system project, all the programs for loading and conversion have been completed and run. Six programs, comprising on-line and batch functions, are now in full-scale production operation.

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Effects 75% Savings in Programming Time Productivity Aid Replaces Bureau's Cobol Code

FAIRFIELD, Calif. — A small service bureau here has effected a 75% savings in programming time by using a programmer productivity aid to replace Cobol code.

Luhning Computer Services, Inc. (LCS) caters largely to area school districts, which time-shared three years ago on a Digital Equipment Corp. Decsystem-10 mainframe at the local community college. The districts connected their terminals and printers to the college over leased lines, while LCS coordinated their data processing, developed new programs and maintained existing programs for on-line payroll and accounting. The programs were writ-

ten in Cobol with extensive use of Isam files.

Three years ago, the districts wanted to expand their data processing into other areas. However, the college computer could not handle additional work without an expensive upgrade.

"We enjoy working with our users, and we get a real sense of satisfaction when we write a program that makes the user's job easier," LCS President Hank Luhning said. "But developing software in Cobol was slow and tedious, even though the Decsystem-10 was a nice machine for Cobol programming."

"We had on-line text editors, used

the Copy facility extensively and wrote all the reports we could in the Cobol report writer," he noted. "The Decsystem-10 is a fast computer, and the compiles went very quickly; but we still had to write Cobol code."

Writing Cobol Proved Tedious

Writing Cobol code meant anywhere from several hundred to several thousand lines per program. "Much of the programmer's time was taken up by the sheer volume of code — creating, entering, testing and debugging it. There just had to be a more concise way to tell the computer what to do," Luhning recounted.

"We began looking at minicom-

puters for the districts and stumbled upon User-11 [from North County Computer Services, Inc. of Escondido, Calif.], a data management system for [DEC] PDP-11s running under the RSTS/E operating system," recalled Luhning.

"After studying User-11 and talking to several satisfied customers, we decided it was the right way to go," Luhning said. LCS did not look at anything else "too closely, actually. We didn't see many others like it."

Two aspects of User-11 that particularly interested Luhning were its data dictionary and the fact that product features are largely the result of user requests.

Also noteworthy, Luhning said, is the fact that North County Computer Services has a sizable time-sharing business itself, with over 200 applications running on four PDP-11/70s. "They know firsthand all the headaches associated with managing an on-line data processing operation," he emphasized.

LCS recommended that the school districts go to a minicomputer environment running User-11. Since the districts had to be off the college computer by July 1, 1981, LCS bought a PDP-11/70 in June to provide time-sharing for all but the largest district, which bought its own PDP-11/44.

"Starting the previous September, we had rewritten more than 400 Cobol programs into User-11," Luhning recalled. "The conversion was on time and went smoothly."

"Since the User-11 programs were functionally very similar to the Cobol programs, the users had no trouble learning the new system," he added. "We have been very pleased since then."

For LCS, User-11 has been the answer. For example, a sampling of 10 programs yielded 8,148 lines of Cobol code, as compared with 2,459 lines of User-11 code, according to Luhning.

"Asking us to go back to Cobol would be like asking a Cobol programmer to start using assembly language," he concluded.

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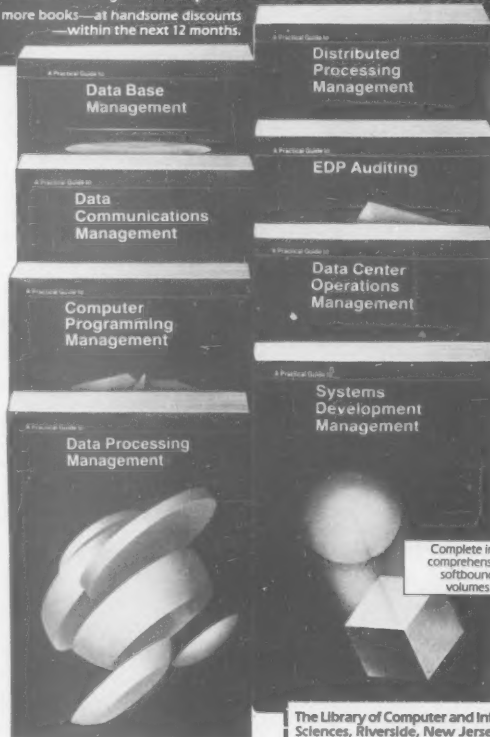
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Reference Guide Out for Wordstar

WILMETTE, Ill. — "Microref," a quick reference guide for Micropro International Corp.'s Wordstar, is the first in a series of guides to be published by Educational Systems, Inc.

The booklets are intended for use as a learning aid for new Wordstar users and as a reference tool for more experienced users. The tabulated paperback guide offers users key procedures listed in steps, illustrations, notes, a glossary of terms, an index and a summary of commands on two double-page spreads, according to a spokesman for Educational Systems.

The suggested list price of the booklet for Wordstar is \$12.95. Further information on "Microref," which is available in computer stores, can be obtained by contacting Educational Systems, 1000 Skokie Blvd., Wilmette, Ill. 60091.

Restaurant Chain Finds System Spices Up Accounting Procedures

CHICAGO — Better management at a lower cost is the primary objective of a restaurant management information system recently adopted by Morton Management, Inc. here.

Owned by restaurateur Arnie Morton, Morton Management operates six Chicago restaurants, ranging from classic French cuisine to gourmet pizza.

Accounting activities for Morton Management have traditionally required the use of two service bureaus: one to produce general ledger for Morton Management and the other to process payrolls for the company's 500 employees.

According to Michael Moore, controller for Morton Management, all accounting operations were handled manually by an accounts receivable and cash control accountant, accounts payable clerk and payroll/personnel clerk in the company's main office, as well as two night auditors and three bookkeepers at different restaurant locations.

Attempts made to use manual operations to control food costs were successful only sporadically, Moore said. So the company decided to investigate the possibility of installing an in-house system to improve control while reducing costs.

Thus began a two-year survey of computer vendors with restaurant systems. The company looked at IBM and Syendi Corp. in Chicago, as well as other local vendors, Moore recalled. Based on the investigation, Morton Management chose a Wang Laboratories, Inc. 2200 minicomputer, which was installed in the fall of 1982, along with a Restaurant Management Information System, a software package distributed by the Office Manager, Inc., based in Seattle.

The restaurant system is operated on the Wang 2200 with 128K bytes of main memory and 80M bytes of disk storage, as well as a matrix printer and daisywheel printer. Currently, two interactive workstations are operated in the main office, while a third is installed at another branch in the Washington, D.C., area.

"Processing the general ledger and payroll, the restaurant system eliminates the need for outside service bureaus," Moore said. "By reducing our costs \$2,000 to \$2,500 a month, the system will pay for itself in two years, without even taking into consideration the beneficial effects of investment credits and depreciation.

"The system also provides us with the capability to automate food costs control," Moore noted. "This is very important since a savings of even one or two percent can result in a very substantial increase in margins or profits."

The recipe control module, for example, accumulates recipe costs based on in-

gredient, preparation and cooking costs. A master file of recipes, common to all restaurants, contains amounts and units of measure for each recipe, including a list of each recipe's ingredients.

Morton Management has also begun using a word processing program to produce more personalized mailings, Moore said.

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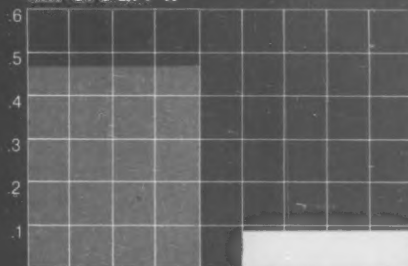
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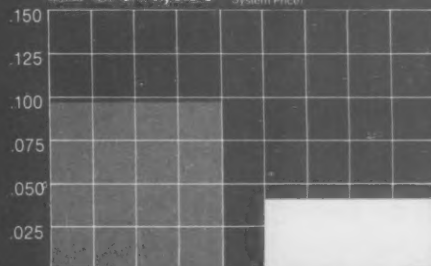
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Network Counts Its Blessings With Package

TIDEWATER, Va. — The Christian Broadcasting Corp. is getting the good word out more efficiently these days, thanks in part to a software productivity package installed last year to cut generation of Cobol code.

The Christian Broadcasting Network (CBN) purchased an application development and retrieval system "to get some of our batch systems up in a shorter time frame," said Joseph Runk, manager of data administration and quality control at CBN. "We also wanted software that was easy to use."

Programmers were using Pro/Grammar from Pan-sophic Systems, Inc. of Oak Brook, Ill., within three days; 20 programmers now use the system. "When a new person comes on staff, it is not long before they can become productive in Pro/Grammar," Runk said. "They are becoming productive sooner than is ordinarily the case."

Batch Development

Runk estimated that CBN is enjoying a 5:1 productivity ratio with Pro/Grammar vs. Cobol. He noted that his DP center is moving away from doing Cobol programming for development of batch systems.

"We will develop any new batch systems in Pro/Grammar," he said. "It takes people about one-fifth as much time to write in Pro/Grammar as it takes using Cobol."

The package handles many of the routine aspects of coding, Runk said. "I have been working in the DP area since 1962 with Cobol, Fortran, PL/I and assembler," he said. "I really get very frustrated by the need to define every single field and format and record input layout in Cobol. Then, if you have to change anything, it has to be redesignated in Cobol."

"With Pro/Grammar, all of that is done for you. It handles all of the spacing, titling and so on. You can spend your time working on

logic."

In addition, Pro/Grammar does formatting, paging, footings, headings and carries information across page boundaries. "The same changes are not easily accomplished using Cobol," he said.

"I appreciate Pro/Grammar's allowing you to bypass the environmental division that is basic to Cobol. In Pro/Grammar, you can spend the

majority of your time determining how something will operate in the procedure division."

Quicker Response

The package has enabled Runk to respond much more quickly to management requests. "I can sit down and do a Pro/Grammar program in an hour or two," he said. "This is a welcome alternative to sitting down and

writing the specs and giving them to a junior programmer to do. It lets me give reports to my boss in a matter of hours after the initial request was made."

Uses of the package are not limited to small applications at CBN. "We are now writing a project control system using Pro/Grammar which will report to upper management the status of DP projects here at CBN," Runk

said. "The system will include reporting on hours by project, task, application and department."

The package's speed was recently demonstrated to management in a CBN telethon that ran from 10 a.m. to midnight for two weeks. Using Pro/Grammar, the company president was able to receive daily reports on the number of new contributors to the network, Runk said.

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System Speeds Data Access for Jet Plane Broker

ROCKVILLE, Md. — The need was simple and straightforward: a computer system with a data base that could be accessed and updated by non-DPers while being overseen by a data processing department consisting of one person.

Meeting that need was the task facing Omni International Jet Trading Corp., a trading company whose main commodity is jet

planes. According to Wayne Hilmer, company chairman, Omni needed to provide its brokers on the trading floor with easy access to a myriad of information about the jets they were selling. Those departments at Omni responsible for providing up-to-the-minute information about jets, such as purchasing, research and sales, would be charged with responsibility

for entering the information themselves, as there were no data entry clerks when the system was planned.

Up until that time, brokers, researchers and marketing department employees kept separate paper files of information, none of which was as timely or as thorough as management wanted it to be. Nor was the information easily obtained. A broker had to ask a caller to wait un-

til the information he sought was retrieved from a file. Time was wasted while the broker searched for the file needed.

In some cases, the information had never been compiled because it was too time-consuming or awkward to use.

After scanning hardware offerings from several vendors, Omni settled on the purchase of an IBM System/

38 mid-range business computer, which DP Manager Deborah Reynolds described as "very user-friendly." Other hardware in Reynolds' shop includes 32 CRT terminals, including IBM 5251s and 5291s, two IBM 5256 Model 3 printers, a Nippon Electric Co. letter-quality printer and an IBM 3370 disk drive.

Proprietary software called Omni-Tel was designed in-house by Reynolds. Omni-Tel helps brokers track the data they need to build sales, Hilmer said. For example, when a jet's owner engages Omni to market his plane, the company can use the System/38 to prepare and print a written message called an Omni-gram to previously identified prospective buyers.

Or perhaps a salesman needs to know the number and availability of a particular make of jet with no more than 1,200 hours of flight time logged. He can summon the information he needs from one of Omni's 27 terminals, selecting the file he wants from a limited menu after inputting simple log-on commands.

By pressing two keys, the salesman can produce a list of all such jets available. Also displayed are the present owner, hours flown, location of the planes and their histories of past sales and equipment installed.

This type of information is valuable to the client as well, Hilmer said. The owner of one make of jet, for example, may want to buy a larger plane whose manufacturer will not accept a trade-in. Omni will act to sell the trade-in and underwrite the transaction. The plane owner wishing to sell may be asking too high or too low a price. But he won't have to wait long to find that out, Hilmer said, since the information is readily available to Omni with the history of sales and purchases of this type of plane a few keystrokes away.

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Cobol Optimizing Program Helps Bank Save CPU Time

HOUSTON — A bank here has credited a Cobol optimization program installed on IBM mainframes with cutting its CPU utilization and I/O time by 60% and saving \$400,000 in the past year.

Texas Commerce Bank, which handles processing for its parent company, Texas Commerce Bancshares, operates three data centers with an IBM 3081, a 3032, two 4341s and two 370/158 mainframes that service about 60 member banks. All but the 370/158s run under IBM's MVS-SP Release 3 operating system; the 350/158s use MVS-SP Release 2. All the systems use the same software and communicate with each other via a combination Systems Network Architecture (SNA) and Binary Synchronous Communications network.

About a year ago, Texas Commerce began to feel that some of its Cobol programs were not running as effectively as they should. Looking specifically at two sets of application programs, the bank estimated it could save about \$200,000 if some of its Cobol programs ran more efficiently. As it turned out, the firm saved twice that amount, according to the firm's Senior Vice-President, Tom Vicknair.

CPU Time Addressed

As an example of those savings, Vicknair pointed to about 300 programs which handled international transactions. The international applications were using dramatically more CPU time and "we knew something was wrong," Vicknair stated. "CPU utilization by those programs had increased more rapidly than the volume."

Hoping to solve the problem, the bank installed CA-Optimizer from Computer Associates, Inc. The package, Vicknair explained, automatically optimizes Cobol pro-

grams, making them more compact and faster running. In addition, the package has an Analyzer module which can evaluate how much computer time each instruction uses.

Use Underestimated

Using the Analyzer module, the bank tested the eight most frequently used international programs for errors in logic. The problem was found to be a subroutine which was called more and more frequently as international business practices changed. The designers of the international applications had expected the subroutine to be used infrequently.

By the time Texas Commerce installed CA-Optimizer, nearly every other transaction called the subroutine, Vicknair recalled. With CA-Optimizer, it took about eight hours to identify the problem and about 20 hours to fix.

"I don't think we could have found [the problem] without Analyzer," he added, noting that the international applications worked accurately, just not efficiently.

The solution to the international applications problem was to make the routine resident in the programs that frequently used it. "We cut our I/O and CPU utilization by 60%," Vicknair recalled.

Targeting Accounting

After solving the problem with the international department applications, Texas Commerce tried the CA-Optimizer package on its time deposit accounting applications, another set of programs thought to be using too much CPU time for the number of transactions handled.

Using the same basic testing method as it did with the international applications, the bank traced the problem

to the way one programmer handled a change in a posting program.

"The programmer had just allowed for more decimal places than were necessary," Vicknair explained. "That caused the program to call up the [MVS-SP] subroutine to handle extended decimals," he added.

Again, the problem was not programmer error, he noted, because the Cobol program was correct. The problem arose when the program was converted to assembler language. The programmer had no way of knowing that by extending the number of decimal places he would necessitate using the subroutine.

The solution was to make the decimal handling routine resident in the program. But this problem, Vicknair maintained, would have been virtually impossible to spot just by looking at the program.

Execution Time Increased

The CA-Optimizer package is currently used as a standard part of the bank's Cobol compiler. Running Cobol programs through the optimizer automatically results in a 5% to 10% increase in execution time.

In addition, the Analyzer segment of the CA-Optimizer package is used when there are suspected problems with an application or when new applications are being installed on the system.

Moreover, Vicknair observed, the Analyzer module can be used to test purchased software. Since Texas Commerce Bank has a policy of always buying the source code for each purchased package, situations have arisen in which the bank has found problems which make purchased software run less efficiently. When those situations arise, the bank informs the vendor of the problem.

International Software Guide For 1983-84 Released

PRINCETON, N.J. — Computing Publications, Inc. has released the 1983-84 edition of its *International Directory of Software* for established DP users who need information about systems and applications software packages for mainframes and minicomputers, and systems software packages for microcomputers.

This edition, which covers all major U.S. products as well as selected international packages, reportedly has 25% additional coverage. This includes over 5,100 packages from over 1,500 vendors and 2,300 new packages.

The *International Directory of Software* is divided into 107 categories of software and provides a three-way index system to facilitate searches for information about particular products. Software products can be located by function, industry, name, acronym or supplier.

The data supplied on each product includes the supplier and terms, configuration requirements, languages, date of origin and a detailed description.

The publishers of the directory will provide quarterly updates to the booklet as part of the subscriber service.

Four updates will be produced each quarter covering systems software, accounting and financial applications packages, banking and insurance software and a category for specialist applications software.

The publisher is making the directory available on a 30-day, no-charge trial. The full service, including updates, costs \$244 until July 31. It can be ordered from Computing Publications, located at Princeton Forrestal Center, 101 College Road E., Princeton, N.J. 08540.



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Calendar

Week of July 24

July 25-29, New York — **CICS Internal Architecture**. Contact: Sysed, Inc., One Park Ave., New York, N.Y. 10016.

July 25-29, Sunnyvale, Calif. — **Workload Analysis and Forecasting**. Contact: Institute for Software Engineering, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

July 25-29, Phoenix — **Advanced Structured Analysis**. Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 25-29, Houston — **CICS/VS Application Programming, Command Level**. Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

July 25-29, Detroit — **Siggraph '83, The Tenth Annual Conference on Computer Graphics and Interactive Techniques**. Contact: Siggraph '83 Conference Office, 111 E. Wacker Drive, Chicago, Ill. 60601.

July 25-29, New York — **Vsam**. Contact: Sysed, Inc., One Park Ave., New York, N.Y. 10016.

July 25-29, Columbus, Ohio — **Project Planning & Control Workshop**. Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 26, New York — **CICS/VS Application Design**. Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

July 26, New York — **Microcomputers Emphasizing Their Use in Data Communications**. Contact: Micro Ed., 31 Marshall Drive, Edison, N.J. 08817.

July 26-28, Dallas — **SAS Basics Course**. Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

July 26-29, St. Paul, Minn. — **Structured Requirements Definition**. Contact: Georganna Carson, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

July 26-29, Wellesley, Mass. — **Structured Programming**. Contact: Q.E.D. Information Sciences, Inc., P.O. Box 181, 180 Linden St., Wellesley, Mass. 02181.

July 27, New York — **CICS/VS Application Programming Macro Level**. Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

July 27-28, Summit, N.J. — **IMS Message Format Services**. Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

July 27-29, Hasbrouck Heights, N.J. — **Data Communications**. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

July 27-29, Dallas — **SAS Computer Performance Evaluation Course**. Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

July 27-29, Washington, D.C. — **Distributed Systems Design: Micros to Mainframes**. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 28, New York — **CICS/VS Application Design**. Contact: Dianne Halper, On-Line Software International, Fort Lee Executive

Park, Two Executive Drive, Fort Lee, N.J. 07024.

July 28, Nashua, N.H. — **How to Make Your Computer System More Efficient**. Contact: New Hampshire College, 2500 N. River Road, Manchester, N.H. 03104.

July 28-29, Washington, D.C. — **Microcomputers: Emphasizing Their Use in Data Communications**. Contact: Micro Ed., 31 Marshall Drive, Edison, N.J. 08817.

July 28-29, Boston — **Developing Business DP Systems — A Management Briefing**. Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 28-29, Chicago — **Local-Area Networks: Selection Guidelines**. Contact: Datapro Research Corp.,

1805 Underwood Blvd., Delran, N.J. 08075.

July 28-29, Frederick, Md. — **Construction Cost Estimation & Bidding: Using the Personal Business Computer**. Contact: Phyllis W. Parrish, Center for Management Development, College of Business and Management, University of Maryland, College Park, Md. 20742.

Week of July 31

Aug. 1-3, Dallas — **Data Base Management Systems: Concepts and Guidelines**. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 1-3, Chicago — **Programming in Basic**. Contact: The American Institute for Professional Educa-

tion, Carnegie Building, 100 Kings Road, Madison, N.J. 07940. Also being held Aug. 8-10 in Minneapolis.

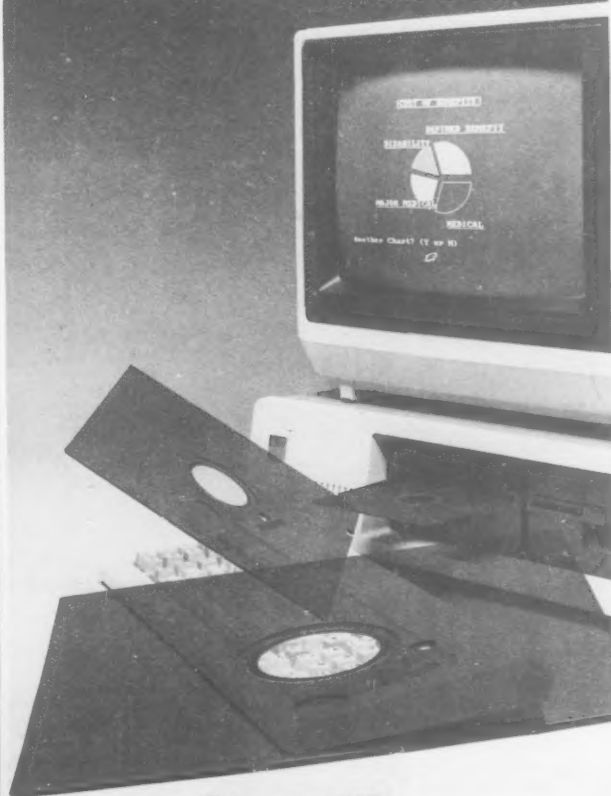
Aug. 1-3, Dallas — **Word Processing Systems: Planning, Design and Operation**. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 1-3, San Francisco — **Evaluating, Selecting and Using Computer Software Packages**. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 1-3, St. Louis — **Data Communications for Microcomputers**. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

(Continued on Page 46)

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Calendar

(Continued from Page 45)

Aug. 1-3, Atlanta — **Telecommunications Management: Cost Reduction Techniques.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 1-3, New York — **Successful Use of Minicomputers.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 1-4, Washington, D.C. — **Data Base Administration and Control Workshop.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

Aug. 1-4, Dallas — **IMS/DS (DL/1) Application Programming.** Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

Aug. 1-4, New York — **CICS/VS Application System Design.** Contact: Rosa DiSanto, Comped Technical Corp., 1133 Ave. of the Americas, New York, N.Y. 10036.

Aug. 1-5, Atlanta — **Structured Systems Design/Structured Program Design Combined Course.** Contact: Georganna Carson, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

Aug. 1-5, San Francisco — **Systems Analysis and Design Workshop.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

Aug. 1-5, Santa Cruz, Calif. — **Industrial Robotics for Computer Scientists and Engineers.** Contact: Institute in Computer Science, University of California Extension, Santa Cruz, Calif. 95064.

Aug. 1-5, Fort Lee, N.J. — **CICS/VS Internals.** Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

Aug. 1-5, Chicago — **CICS/VS Command-Level Application Programming.** Contact: Rosa DiSanto, Comped Technical Corp., 1133 Avenue of the Americas, New York, N.Y. 10036.

Aug. 2-4, Boston — **Data Communications Network Design and Optimization.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

Aug. 2-4, Wellesley, Mass. — **Data Communications Concepts.** Contact: Q.E.D. Information Sciences, Inc., P.O. Box 181, 180 Linden St., Wellesley, Mass. 02181.

Aug. 2-5, Los Angeles — **Local-Area Networks.** Contact: Ruth Dordick, Integrated Computer Systems, 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405.

Aug. 2-5, Topeka, Kan. — **Structured Program Design.** Contact: Georganna Carson, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

Aug. 2-5, Los Angeles — **Computer Graphics.** Contact: Ruth Dordick, Integrated Computer Systems, 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405.

Aug. 3-5, Cary, N.C. — **SAS Color Graphics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

Aug. 3-5, Dallas — **Distributed**

Systems Design: Micros to Mainframes. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 3-5, Washington, D.C. — **Structured Testing.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

Aug. 3-5, Boston — **Personal Computers and Networking.** Contact: Center for Advanced Professional Education, 11928 N. Earllham, Orange, Calif. 92669. Also being held Aug. 8-10 in Honolulu, Aug. 17-19 in San Francisco, Aug. 22-24 in New York and Aug. 29-31 in Los Angeles.

Aug. 3-5, Kansas City, Mo. — **Data Communications — An Intensive Introduction.** Contact: American In-

stitute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Aug. 3-5, New York — **SAS Basics Course.** Contact: SAS Institute Inc., P.O. Box 8000, Cary, N.C. 27511.

Aug. 4-5, Annapolis, Md. — **Fundamentals of Data Processing for Administrative Assistants and Office Support Staff.** Contact: Phyllis W. Parrish, Center for Management Development, College of Business and Management, University of Maryland, College Park, Md. 20742.

Aug. 4-5, Philadelphia — **Local Networks: Promise into Practice.** Contact: Architecture Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424. Also being held Aug. 16-17 in Washington, D.C., Aug. 18-

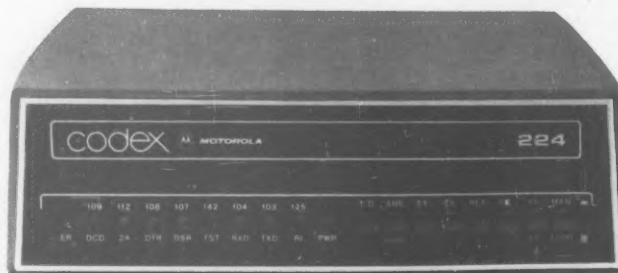
19 in Minneapolis, Aug. 29-30 in Boston and Aug. 31-Sept. 1 in Phoenix.

Aug. 4-5, New York — **Implementing Personal Computers in the Corporate Environment.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Aug. 5-6, Honolulu — **Applying the New Tools for Profit and Cash Flow Planning: Graphics and Personal Computers.** Contact: Mathew Malok, The American Institute of Certified Public Accountants, 1211 Ave. of the Americas, New York, N.Y. 10036. Also being held Aug. 8-9 in San Francisco, Aug. 11-12 in N. Hollywood, Calif., Aug. 22-23 in Atlanta, Aug. 25-26 in Lanham, Md., and Aug. 29-30 in Minneapolis.

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Calendar

Week of August 7

Aug. 7-11, Chicago — **Computers in Engineering: Conference and Exhibit.** Contact: Mary S.H. Benedict, Exhibits Manager, The American Society of Mechanical Engineers, 345 E. 47th St., 9A, New York, N.Y. 10017.

Aug. 8-9, Fort Lee, N.J. — **CICS/VS Performance and Tuning.** Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

Aug. 8-9, Washington, D.C. — **A Practical Guide to Networking Personal Computers.** Contact: Personal Computer Management Association, 11928 N. Earham, Orange, Calif. 92669. Also being held Aug. 15-16 in

Saddlebrook, N.J.

Aug. 8-10, Orlando, Fla. — **Computer Negotiations Workshop.** Contact: International Computer Negotiation, Inc., Suite 1701, 200 St. Andrews Blvd., Winter Park, Fla. 32792.

Aug. 8-10, Atlanta — **Computer Networks: Protocols, Standards and Compatibility.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 8-10, Frederick, Md. — **How to Use a Personal Business Computer: Programming in Basic.** Contact: Phyllis W. Parrish, Center for Management Development, College of Business and Management, University of Maryland, College Park, Md. 20742.

Aug. 8-10, San Francisco — **Structured Analysis, Design and Programming: Implementing Improved Systems Methodologies.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 8-10, New York — **SAS Computer Performance Evaluation Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

Aug. 8-10, Boston — **Microcomputer Systems: A Guide to Selection.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 8-10, Chicago — **Fundamentals of Data Communications.** Contact: American Management Associations, 135 W. 50th Street, New York,

N.Y. 10020.

Aug. 8-10, St. Louis — **Data Communications: An Introduction to Concepts and Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 8-10, Washington, D.C. — **Data Dictionaries: Concepts, Contents and Uses.** Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

Aug. 8-10, Denver — **Introduction to Office Automation: Concepts, Techniques and Applications.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 8-10, Washington, D.C. — **Micro and Home Computers: Techniques and Applications.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

Aug. 8-10, Denver — **Systems Analysis and Design: Concepts and Effective Practice.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Aug. 8-10, New York — **User Documentation.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

Guide Covers Earth Stations

WASHINGTON, D.C. — "Installing Your Satellite Uplink: What You Need to Know" is the title of a recent study published by the Public Service Satellite Consortium (PSSC).

The guidebook reportedly provides an analysis of the technical, operational and cost issues involved in making a decision to install and operate a satellite-transmit earth station or "uplink." The study provides advice on how to design a satellite communications facility to fit within budget constraints and how to maximize an earth station investment by targeting business opportunities available to uplink owners.

"Installing Your Satellite Uplink" covers such considerations as analyzing potential markets for uplink facilities, determining potential video and audio applications and revenue-generating services, determining capital and operating costs, regulatory and legal requirements, construction, site location and selection, permits, security, licensing, technical feasibility and system enhancement capabilities.

Also included in the guidebook is a 22-step checklist to follow when you are ready to purchase and install an uplink, a sample floor plan and list of equipment for a low-cost teleconference studio, a summary of current domestic communications satellites, a glossary of technical terms and easy-to-read charts and graphs of how a dedicated network and an uplink work also are included in the guidebook.

The booklet is available from PSSC at the special introductory price of \$295 until Sept. 15. After that date, the price will be \$295 for PSSC members and \$350 for others. Orders should be sent to the PSSC Financial Affairs Department, Suite 907, 1660 L St. N.W., Washington, D.C. 20036.

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EDITORIAL

Diploma Not a Free Ticket

Mothers, don't let your babies grow up to be programmers. Simply knowing how to write instructions for a computer may not be enough to guarantee a career anymore.

A recent study of 350 user sites by International Data Corp. found that staffing costs have declined steadily in the past three years as a percentage of the total DP budget [CW, July 4].

Just what is going on here? An educated guess might lead to one of two conclusions. Either the impact of the recession has led DP managers to pay lower salaries or they are taking the time to search for talent that offers business know-how combined with technical skills.

As users wean themselves away from the DP department by assuming more and more responsibility for their own information processing, they find they have less of a need for technical expertise at a basic level. Less hand-holding requires fewer high-priced handholders. The emergence of tools such as information centers, user-friendly languages and the omnipresent microcomputer has reduced the necessity to hire waves of entry-level staffers.

Another reason for the smaller cut staffing costs seem to be taking from the DP budget pie may be that colleges and universities are finally listening to the pleas of management information systems directors that they need information processing technicians who know as much about running a business as they do about writing a program. When both skills are packaged in a single person, the overall cost to the DP manager who is hiring that person is bound to drop.

These forces are combining to put entry-level programmers in an age-old bind: They can't get jobs without experience and they can't get experience without jobs. With the glut of recent graduates, employers don't have to pay the exorbitant fees of yesterday to attract technicians whose only selling points are tied to the ability to code an applications program. Employers can pick and choose among hundreds of the "lean and mean" unemployed.

This situation leaves newly trained programmers in a bad position — if programming is their only skill. But it also puts highly qualified talent at the top of the world and may be working to the advantage of hard-pressed DP executives who can get more mileage from their hiring dollars.

Now is the time to redirect would-be technicians toward areas of real need. These include technical areas such as data communications, data base administration, compiler engineering and personal computer networking software. However, their education should also include exposure to less esoteric areas, such as income, output and profitability.

New graduates would be well advised to remember that a diploma listing a specialty in computer science is not automatic assurance of an inside track in the increasingly sophisticated MIS arena.



'Around Here, We Do Not Refer to the Application of the PDQ-Flight Preferential Selection Algorithm as "Bopping the Bias Button."'

LETTERS

A Serious Problem

In his letter to the editor [CW, June 27] criticizing a recent *Computerworld* editorial, Robert Ellis Smith, publisher of *Privacy Journal*, argued that he could see no surveillance threat rising from the recently launched Secret Service use of the Federal Bureau of Investigation's National Crime Information Center (NCIC). He also said that he believed the FBI had the full legal authority to operate the NCIC system in a surveillance mode.

While the new NCIC application (known as the "Protective File") is presently limited to surveillance of "only" 125 people, I fail to find much comfort in that fact. Surely Smith is aware of an earlier NCIC Stop Index program. Stop Index was identical to the Secret Service/NCIC operation — indeed, it was conducted to assist, among other agencies, the Secret Service. That NCIC operation covered not 125, but 4,700 persons.

Like the present operation, the subjects of the Stop Index were not wanted felons. Rather, they were "of interest" to the FBI.

While government officials testified to their intention to include only 125 people in the watch list, we certainly have ample evidence that government intentions can and do change.

The NCIC was created to be a computerized listing of outstanding warrants and warrants. In our mobile society, such a function would presumably be of value to state and local authorities. Even today, that remains the FBI's principal rationale for the NCIC.

To use an information retrieval system to surveil people is to turn the system function upside down. To provide information to help state and local police is one thing; it is

quite a different thing to monitor requests for information to surveil noncriminals for a federal agency.

Clearly, Congress has been lax in monitoring the growing diversity of uses to which the NCIC has been put. But it would seem reasonable to differentiate all the past uses (information repository, communications controller and so on) from a clear surveillance function.

As Smith correctly observes, there exists scant reason to believe that the Secret Service/NCIC system will improve presidential security. His suggestion that *Computerworld* ought to attack this aspect of the issue has appeal but for one problem: The "experts" in presidential security argue that they need the system. In light of these experts' strong testimony to that effect, I fail to be optimistic about the potential for successfully challenging the system on logical grounds.

But even if the Protective File was effective, we should as a matter of public principle be deeply concerned about developing a national surveillance system — for that is what the Secret Service/NCIC system is. While the stated intention is to limit the system to 125 people, the technology in the NCIC system allows that to be expanded easily to thousands.

If Congress does not object as a matter of principle to the surveillance, the FBI will surely be tempted to add other types of targets. Further, if the FBI can do it, then so can the welfare agencies and so on, without limit.

Far from crying wolf, the *Computerworld* editorial illuminates a very serious problem that is with us now.

Terril J. Steichen
New Perspectives Group, Ltd.
Fairfax, Va.

LECHT ON SCIENCE / Charles P. Lecht

Will the Real Dummy Please Stand Up

We recently heard (*The Wall Street Journal*, June 24) that Paradyne Corp. of Key Largo, Fla., had become the target of fraud charges for allegedly having hoodwinked the Social Security Administration (SSA) in the course of competing for a \$100 million systems contract. If the devilish libretto of this opera buffa, set forth in the sworn affidavit of a former Paradyne engineer and sung sweetly into the ear of a Florida federal court, is to be believed, the SSA officials in attendance at the winning Paradyne system demonstration were the victims of a twofold deception (or a "Double Inconstance," as Pierre Carlet de Chamblain de Marivaux might have had it).

In the first place, Paradyne is said to have unveiled an empty box, bedizened with the famous blinking lights of early sci-fi movie tradition, and passed it off as an encoding device. With a disingenuousness worthy of the Wizard of Oz, Paradyne made the point that it never claimed the blinkin' whatsis was a functional anything. (It was, Paradyne said, a mock-up, replaced 30 days later by a truly functional whatsis).

Secondly, warbled the engineer (later expelled from Paradyne for eating of the fruit of poor performance), the computer system itself was actually a Digital Equipment Corp. machine stripped of its original designer label and outfitted "en travesti" with the "Paradyne P-8400" name. Indeed, he further maintained that the P-8400 hadn't even been discussed with Paradyne's engineers at the time of the presentation to the SSA of the purportedly operational system.

To add a piquant icing to the apparently hollow Paradyne/SSA wedding cake, the separated engineer

charged in his affidavit that upon the award of the SSA contract to Paradyne, this company relied for its design of the product upon plans filched from Control Data Corp. through a former CDC employee who joined Paradyne, subsequently to become "a key manager in the 8400 project."

Raises Questions

Of course, all these allegations have yet to be proved, and I have no knowledge as to their veracity. Still, they do raise some interesting questions.

If the charges are true, who were the simpletons so hoodwinked (*The Wall Street Journal* simply identifies them as "officials" of the SSA), how in the name of Grace Hopper did they get hold of \$100 million to spend, and can all the regulatory watchdogs have been out at the doggy run while the "dummy system" was doing its number for the dummy system buyers?

In the face of such a scenario, one's imagination creaks and complains like a balloon being overfilled with hot air. No one would buy even a tiny Toyota without at least looking under the hood, let alone purchase \$100 million worth of hardware and (we presume, albeit without much confidence) software without some kind of quality — perhaps even identity — checking. A blinking encoder box — well, maybe; but a disguised DEC computer passed off as a P-8400 meeting CDC specifications begins to challenge the credulity of all but the founding fathers of Wonderland.

Well, let's sit back and take our pleasure where we may; let's try to reconstruct the Paradyne demo for the SSA in the unearthly light of our

engineer's extraordinary testimony. Yes, I believe I can see it now. Several "officials" of the SSA are coming into the demonstration chamber. Gaily twinkling lights adorn an empty box before them, evoking the spirit of Christmas and the joy of selfless giving. Bells are jingling, too, perhaps. Coffee, danish, piece of the action on Earth and good will schmoozing toward men precede the unwrapping of the P-8400 (a DEC device in drag).

One of the jolly folks from SSA timidly ventures, "Say, isn't that a CDC machine?" He is ridiculed for not grasping that the "P" on the label can only stand for "Paradyne": How could it stand for "CDC"? (Can't he even spell?) This quick reproach silences yet another SSA official who had been about to say "looks like a damn DEC to me," but now thinks better of it.

So the demo continues. The empty light box is now blinking out *Bringing in the Sheaves* in Morse code. Surely it is more blessed to give than ask snotty questions; besides, it sure is a pretty box. Sold. Contract signed, and what's up next in the demo derby, Doc?

It's got to be enough to induce a cerebral accident in Santa Claus and send the bleedingest liberal heart into retirement among the crenellated homes of tax-sheltered red-necks in the Florida panhandle. One hundred million dollars ain't peanuts, after all. You could buy 20,000 reputable, high-class, well-accounted machines with no alias at all for that much — IBM Personal Computers, for example, or an inexhaustible harvest of Apple Computer, Inc. Lisas.

I have no argument with the Securities and Exchange Commission (or disaffected Paradyne stockholders)

for seeking to determine Paradyne's culpability, if any, in this matter. But I, for one, am still bemused by the thought that there could be both people and process with authority to entrust \$100 million to anyone who can't tell a CDC from a DEC from a Paradyne from a blinking, empty box.

Public Interest Protection?

As for those responsible for approval and review, I find it difficult, if not impossible, to believe they were entirely oblivious to a deal of such magnitude. On the contrary, I would have to be inclined to assume that in their watchdoggy capacities, they barked out a specific endorsement of it. If this be protection of the public interest, fancy what it must be like to wander through the corridors and crevices of government — or industry — unguarded.

If Paradyne is in fact guilty of all, or even some, of the charges brought against it, we have ample cause to be appalled. But my reason rebels in view of the frightful conclusion this suggests. If there were any truth to these allegations, how could anyone's faith in our ability to assess expenditures of nuclear arms delivery devices, submarine safety systems, advanced avionics or survivable superhardened silos survive?

Whatever Paradyne actually showed the SSA, I much prefer to believe that the SSA knew exactly what it was; and, if it really was a dummed system, that it was at least significantly less so than other systems the SSA might have had occasion to view before awarding its contract.

Lecht is president of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

HUMAN CONNECTION / Jack Stone

Initiative, Not Academics, the Key to Growth

One respondent to my quest for guidelines to help novitiates break into DP [CW, June 6] expressed in a recent letter what he suggested was an unorthodox opinion on the subject: DP aspirants should be told that academic credentials, or lack of them, are less important than starting at the rock-bottom rung of the DP ladder — sweeping the floors of a data center, if necessary — and working up through performance on the job.

This reader expressed the wild-eye notion that success in most center jobs is achieved more through hard work than through skills in using a particular machine, specifically, through the classical application of the three I's of business life: Initiative, Industry and Interest.

Surely, such an iconoclastic pronouncement should send shudders up and down the spines of DP professionals who claim increased market value solely on the basis of narrow technical skills and fatten their wallets by hopping like jackrabbits

between jobs in search of a lost bunch of carrots.

For reasons that defy logic, but suggest a certain amount of weariness, most DP directors continue to kowtow to and condone this wretched practice, only serving to perpetuate it instead of initiating a long-range program to promote personnel development from within. Ironically, these directors are the people with the unorthodox viewpoints, since the rest of the business society operates on the premise that lifelong career development truly starts at the ground-floor level, with only rare exceptions for the specialized skills.

Foot in the Door

The reader said, "The fact is that there are many people that are high on intellect and willingness to work — but low on computer knowledge and skills — who would gladly sacrifice some current earning power and a glamorous title for a chance to get a foot in the door of a DP operation. If DP managers opened up entry-level

jobs, however mundane, they would be flooded with people who, over time, will quickly pick up the necessary technical skills and give their loyalty to the organization in exchange — an attribute known to be in short supply in data processing centers."

The reader reported his own remarkable record as testimony to his proposal: "My formal education ended before my 12th year in high school, and I never received any type of formal technical training. I gladly gave up my previous job to begin a DP career as a gofer in the machine operations room at minimum wage simply because I had the confidence to compete vigorously for a not-too-technical DP job and come out victorious."

"I strongly believed in my talents as a quick learner, my abilities to take initiative and my inclinations toward intelligent decisions."

"I also somehow knew that management, having given me the opportunity to perform, would recog-

nize my potential and reward me appropriately. And this is exactly what happened."

Self-Training Materials

"I found that self-training materials were perfectly fine, and I soon developed the knack of learning what I needed from them quite efficiently, a method to be preferred over the rather incredible amount of time I would have had to spend in night school, not to mention the extravagant expenses involved," the reader said.

"I certainly am not belittling higher education; it's just that the technical knowledge needed for an operations career is easily obtained from the combination of reference manuals and on-the-job training."

"When I started in this business, I addressed the janitor as 'Sir.' Now, three years later, I am operations manager and the systems programmer reports to me. My advice to the DP novice is: Grab onto any old job in the data center, learn all you can, work hard, and you will succeed."

READER COMMENTARY

DP Lawyers and Litigation: Another View

Charles P. Lecht's recent series on DP lawyers [CW, May 16 and 30] deserves a response. At the outset, let it be understood that I don't lack sympathy for some of Lecht's feelings about litigation and lawyers.

Lecht's main thesis seems to be that DP lawyers are unable or unwilling to master the technological or scientific material connected with litigation about DP matters and that this is a bad thing. Subsidiary points are that lawyers are greedy and manipulative, that there is too much DP litigation and that the legal system is incapable of satisfactory resolution of technology-related disputes.

One assertion should be dispensed with right off the bat. At the beginning of the article, Lecht seems to suggest that he, not being a lawyer, is prevented from speaking about the law by the legal system and by the American Bar Association (ABA). He is not. One cornerstone of our policy is the first amendment to the U.S. Constitution, which permits anyone to say anything, however malicious, about the law. I do not undertake to defend the indefensible: I wield no cudgels in behalf of the ABA. But Lecht's intimation that the ABA determines the qualifications of lawyers by means of tests is plainly false. The ABA neither has nor ever had the power to pass on the qualifications of lawyers, by testing or any other means.

Lawyers and Lawsuits

Lecht seems to believe that lawyers cause lawsuits. Well, some people might believe that vultures cause carrion. A homely truth deserves repeating: No lawyer starts litigation without a client that wants to litigate.

Lecht's suggestion that the DP client is some kind of bemused Trilby does not square with his unsupported assumption that all 400 of those who he says responded to a call for litigation support were sophisticated businessmen. If they were, and if they were being led around by their lawyers, then more needs to be done about the sophistication of businessmen than about the behavior of lawyers. Lawyers, like DP staffs, require supervision. If there is one thing that has been learned by businessmen dealing with DP, it is that one neglects such supervision at one's peril.

The vexed and complicated subject of precedent is discussed in Lecht's article. It may be that most lawyers — like most people — falter when confronted with a situation without precedent. Lecht begs the question when he implies that technologically novel facts create such a situation. Even if they do, he shows no reason that the distribution of the talent of dealing gracefully with the unexpected justifies "seek[ing] extralegal means to find peace." There are many good reasons for resolving some disputes extrajudicially, but the mere fact that the background is new technology is probably not among them.

According to Lecht, "Most [technically qualified] practitioners of law" misapply precedent to "technically

determined" issues and view as unimportant "the most fundamental basis for a lawsuit — namely, the object under dispute." Here, Lecht erects a man of straw. The fundamental basis for most lawsuits is rights and duties between parties, that is, people and their organizations as owners and actors. Issues are technically determined and the object appears at the core of the matter almost exclusively in patent and other intellectual property litigation, litigation predominantly conducted by a bench and bar with a large population of engineers and scientists among them and with whom the

public seems more satisfied than with most of the rest of the profession.

Technical qualifications to explain the complex to lay judges and juries and to adduce and rebut evidence effectively are desirable indeed. But let's retain a proper perspective by recognizing that lawsuits are not about the speed of light or the structure of the double helix; they're about who did what and to whom.

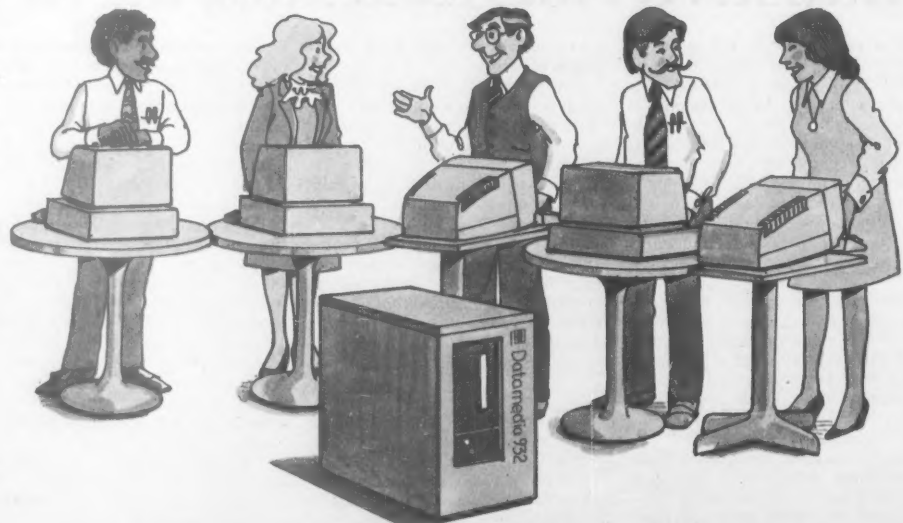
Maybe our legal system is no good. Maybe our society is no good. The legal system reflects the beliefs and ideals, such as they are, of the society of which it forms a part. Great

cultural, social and moral currents propel it. It is bound up with history. The issues are neither clearly perceptible nor — once perceived — susceptible to clear definition. Of all this, Lecht's piece gives us no hint.

Lecht's remarks are probably based on his experience and observation; he cites nobody else's. My own observation leads me to different conclusions. I conclude that the run-of-the-mill lawyer is about as incompetent with DP technology as he is with any other body of knowledge. Whatever trouble our legal system is in is at most marginally caused by lawyers' technological illiteracy.



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Richard L. Conner†

... Ways to Choose Prospective Attorneys

Rather, DP lawyers and clients share the trouble with the nation at large.

If the amount and conduct of DP litigation are symptomatic of that prevailing throughout the land, then we must look to remedies more general than technological education of lawyers. Most of the remedies are beyond the power of the individual litigant or his attorney. Not only do they involve institutional reforms — there is little incentive for litigants to seek them. Counsel may feel frustrated by the system in operation, but the time to strive for change is certainly not in the midst of a dispute. Apart from being preoccupied with

the matter at hand, the client and attorney are disinclined to prejudice the cause by fighting the system; too much is at stake.

For those not regularly involved in litigation, reform of the system is not a burning issue. And disinterested reformers carry the burden of trying to improve a system in which about half the participants at any given instant believe that expense, delay, inefficiency and obscurantism serve their interests.

In the IBM discussion in the second part of Lecht's series, Lecht seems to say that IBM is so big and so resourceful that the Justice Depart-

ment was, and presumably would still be, downright foolish to imagine that it could prevail.

The cynicism that such a viewpoint displays is remarkable. If it is really true that against a defendant having more than some quantum of concentrated economic power, the antitrust laws — laws designed to protect the consumer against just such power — are unenforceable, then the republic is in danger and probably beyond rescue.

After alluding to the vast amounts of money and energy that were poured down the drain in the action, Lecht asks what good was done. Ad-

mitting the possibility that some of the allegations about IBM may have been meritorious, he answers his own query by saying that IBM was "forced to assume an angelic image" for the 13 years the case dragged on. The cost may have been excessive, even grossly so, but such a benefit isn't entirely worthless. An argument can be made that if enforcement of the law causes people and organizations to take up the posture of angels, then the law has done about as much as we can expect of it.

The whole IBM antitrust affair was a fiasco that fortunately had a satisfactory conclusion, albeit at great cost, for IBM and quite possibly for the nation and the DP industry. But it wasn't a fiasco of the kind Lecht speaks of in his article.

Regarding the problem he perceives, Lecht says, "We need to take action before [the scientific neighborhood] becomes a slum." Yet in the entire piece, he offers not one suggestion as to the action to take.

Lecht says that he has been plaintiff, defendant and expert witness in DP-related litigation over the past 30 years, and he suggests that counsel's technological grasp of the cases has been less than satisfactory to him. It is not obvious that is entirely, or even mostly, the fault of the lawyers. A client has the power to fire his attorney if he is not satisfied with the attorney's work. The power to hire and fire is the discipline of the marketplace, and it sometimes still works. An expert witness is under no compulsion to appear; in that role, Lecht always has the option of refusing to work with someone he deems a ninny.

Qualifying Test

I suggest that the most effective qualifying test about science that Lecht could impose would be one created, administered and graded by the client himself. A well-conducted interview, or a series of them, will often suffice. Lawyers with the academic credentials that Lecht seems to seek are not hard to find. In my class at law school (a small class as law school classes go), we had at least one biologist, mathematician, physicist, Ph.D. in operations research and sociologist.

It is prudent to vet one's prospective attorney just as it is prudent to vet one's prospective think tank. The inquiry is in some ways similar: Does the lawyer have character and brains that appeal to me? Does he show an interest in and willingness to absorb the particulars of the matter? Does he exhibit faculties of systematic analysis and clear exposition? Does he have good judgment?

The nature of disputes requires different questions. For example: "Is the lawyer able to disregard the well-being of others enough to win for me?" (Put another way: "Can he adopt my cupidity?" or put yet another way: "Will he place my interests paramount?")

I venture to say that the personal decision involved in hiring an attorney isn't much different from that

(Continued on Page 53)

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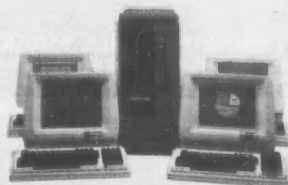
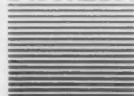
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READER COMMENTARY/Mike Walter†

Self-Management Vital to Managing Others

One morning about a year ago, I arrived at my place of work determined to do the impossible: I was going to defuse some long-standing personal conflicts that grew out of a politically charged hardware conversion. As DP manager, I was directly responsible for successfully implementing a conversion from a remote job entry environment to an on-line interactive system that involved changing vendors.

The change was an unwelcome culture shock for many of our users who complained of not being consulted on important decisions and of not being properly attended to when

problems arose. A small insurrection was brewing and my relationships with some people had soured to the point where my cheery "Good morning" was being met with dead silence.

For my part, I was feeling unappreciated. I had worked nearly 100 days without a day off, with some shifts lasting more than 30 hours. If I wasn't providing more assistance, it was because there was no more of me to give. But while my supervisor reassured me that I wasn't expected to solve the company's political problems, I still found myself becoming more defensive and increasingly en-

meshed in constant backbiting. My frustration grew and my effectiveness plummeted. I had to do something.

Three Principles

I began by acting on three principles that had served me well in the past:

- If you're right but it's not working, then you had better give up being right.
- Accept that there is some truth in everything bad that is said about you, no matter how malicious or off the wall it seems, and work earnestly to improve in that area.

• Problems are never resolved 100% until someone takes 100% responsibility for resolving them. Accepting only 99% of the responsibility implies that you're still 1% right; in that case, go back to the first step.

I decided I was wrong. I decided that no matter who started the problem, I was responsible for letting it continue. I accepted total responsibility for every moment the problem continued without waiting for anyone else to reciprocate with his own good intentions. Next, I granted that perhaps my critics knew something about me that I didn't, and I decided to give up being defensive and to accept even the worst diatribe as the truth and to correct my actions accordingly.

Keeping faith with this last step was not without agony. I had resolved to come clean first with my most prominent antagonist, and I can tell you that it's not easy to list your failings and apologize for them to someone who thinks your first name is "Jerk."

I passed by her office three times before I gathered enough courage to go in. I spent the first 30 minutes stammering through some painful self-criticism. Then I waited in pained silence for the inevitable gloating that I suspected was being suppressed only with great effort. But there was none. Instead, something magical happened. The person sitting behind the big desk expressed her regrets that things had grown so out of hand. Then she began apologizing for her own culpability. Within the hour, we were great friends.

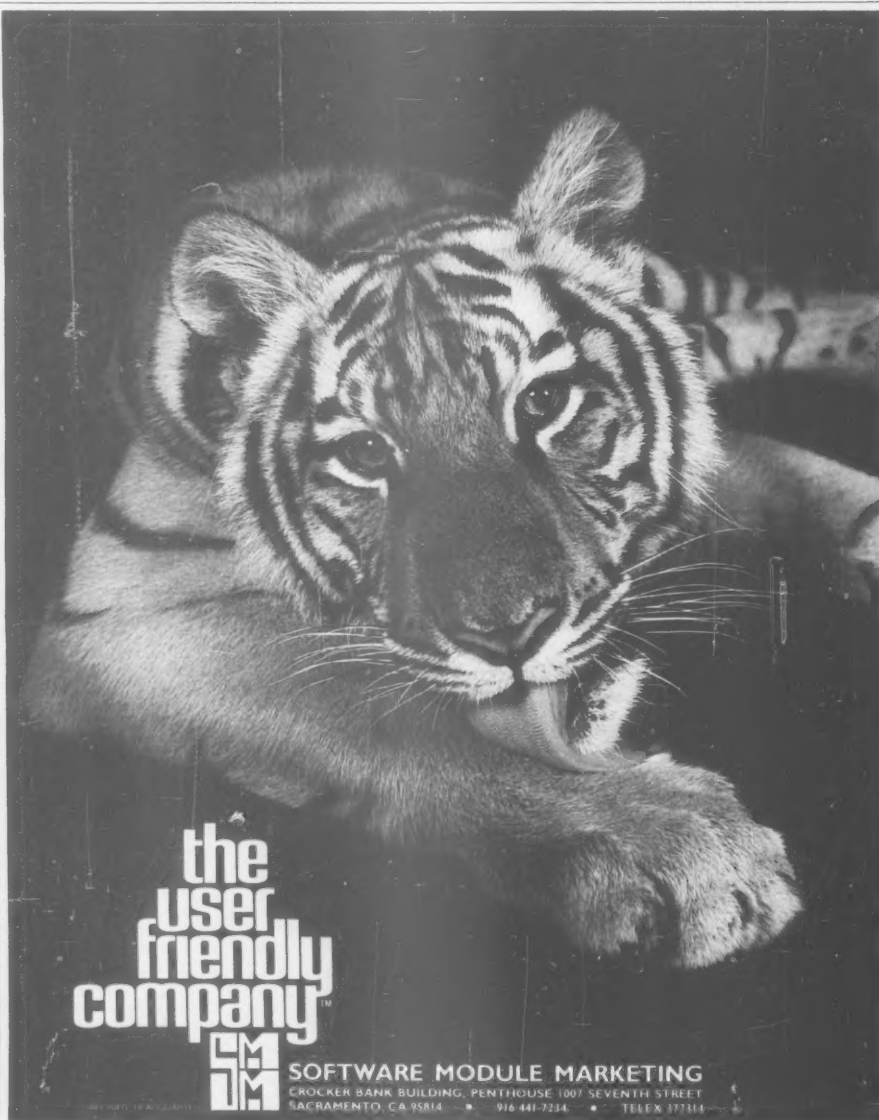
Inebriated with my initial success, I persevered in cleaning up more of my bad relationships. The results were phenomenal, and I learned a simple but powerful truth: Everyone wants to be recognized and taken seriously.

In the end, I discovered what "middle management" really means: If you want to remain effective with people, you had better manage yourself into the middle somewhere, where you are at everyone's service and you are allied with no one. By this, I'm not suggesting that data processing managers be aloof. On the contrary, strong personal relationships are the only managerial tools that aren't water soluble during hurricane season. In fact, if you take an active personal interest in all your users' DP problems, you will find yourself guided to a peaceful middle spot by the invisible hand of personal economics.

As a result of my experiences, I found a center ground that I recommend to all DP managers who are struggling with people problems. It is this: There is no such animal as managing people; there is only self-management in the midst of people. People management is something like weather management — you get what's out there, and sooner or later it comes down in your face.

Good people managers know the words to *Singing in the Rain*.

Walter is systems manager at Battelle, Pacific Northwest Laboratories in Richland, Wash.



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More on Mead

May I compliment *Computerworld* and Henry and Elizabeth Urrows for the In Depth article "An Inside Look: Money Chasing Innovation" [CW, May 23]. Its breadth and scope was very useful.

I would like to add to the brief account in the article of the creation of Mead Data Central. The true origins of Mead Data Central and credit for its inception belong, without question, to the imaginative lawyers of the Ohio Bar Association who determined in the early 1960s that only a full-text, interactive, on-line system would satisfy the needs of the bar. The bond issue, which the article notes, was the original seed money for Lexis. Men like James Preston, then president of the Ohio Bar Association, William Harrington, its executive director, and others with whom I am not familiar deserve the initial credit for the pioneering development. In this sense, the users themselves created Lexis.

Other persons critical to the early definition of Mead Data Central were William Wommack, the executive vice-president and chief planning officer of the Mead Corp., who guided Mead Data Central during its formative period, and Richard Giering, the engineer who developed the full-text, key-word-in-context software that is still dominant in the Mead Data Central system.

Mead assured the success of its high-risk venture investment by astutely obtaining careful, professional research and business planning by the persons it used as start-up management. Moreover, Mead put together a team combining computer specialists and lawyers.

As the article notes, I headed the Arthur D. Little team that did the basic market research around the existing usage of Ohio law on teletype-writer consoles.

This preprototype service had been funded by the Ohio Bar Association and then by an entrepreneurial investment made by William Gorog on behalf of Mead. The Arthur D. Little team included Edward Gottsman and Jerome Rubin, as a consultant. I had been, and Rubin was, a practicing lawyer.

We completed and reported on the market research in November 1969.

DP Lawyers And Litigation

(Continued from Page 51)

involved in hiring anyone else and that the quality of the client's attorney is probably on a par with the quality of others who work for the client. If the attorney isn't up to the task, maybe the client should review the attorney's skills in personal matters generally.

Our legal system is a blight upon the land, and the blight infects DP matters. However, to say that a significant root of the problem is the scientific illiteracy of the lawyers is simplistic and ultimately unconstructive, because it diverts attention both from systemic correction of the problem and from what the individual client can realistically do to assure himself good counsel.

Conner, who studied DP, is an attorney in San Francisco, Calif.

LETTERS

Mead then asked us to develop a business plan with the understanding that I would manage any start-up. When they funded the start-up, I was already committed to entrepreneurial work with another venture. Rubin and I formed a venture management firm to do both jobs on a contract basis.

Initially, from 1970 through the fall of 1971, Mead asked the firm to provide my services as president and Rubin's as vice-president and general counsel.

After a lengthy executive search, in the summer of 1971, I recommended that Rubin be my successor as president. Mead again assured continuity in leadership by asking us to

provide my services as vice-chairman of the board until May 1973. At that time, I left Mead Data Central. Rubin and I ended our relationship. Rubin wanted to go on with Mead. I wanted to go on with venture management.

Another very important thing was the creation of Mead Data Central, Inc. as an independent, operating entity guided by a specially crafted board of directors consisting of James McSwiney, president of Mead, Wommack, Gorog, Rubin and John Phaff, the chief financial officer of Ohio State University. This board permitted Mead Data Central to operate free from normal Mead procedures. The board was immensely helpful in the tough decisions of that

very volatile, high-risk time in the development.

Mead made the decision to launch Lexis as a full commercial service in the fall of 1971. Gottsman joined the effort directly. Rubin's long experience as a practicing lawyer and driving leadership and Gottsman's engineering and managerial abilities then made Mead Data Central the major, profitable company it is today.

Venture management is a new combination of two old disciplines — consulting and start-up management. It is that discipline that Rubin and I applied from 1971 through May 1973 to the start-up of Mead Data Central, which was indeed a breakthrough in high-technology venturing by a major industrial corporation.

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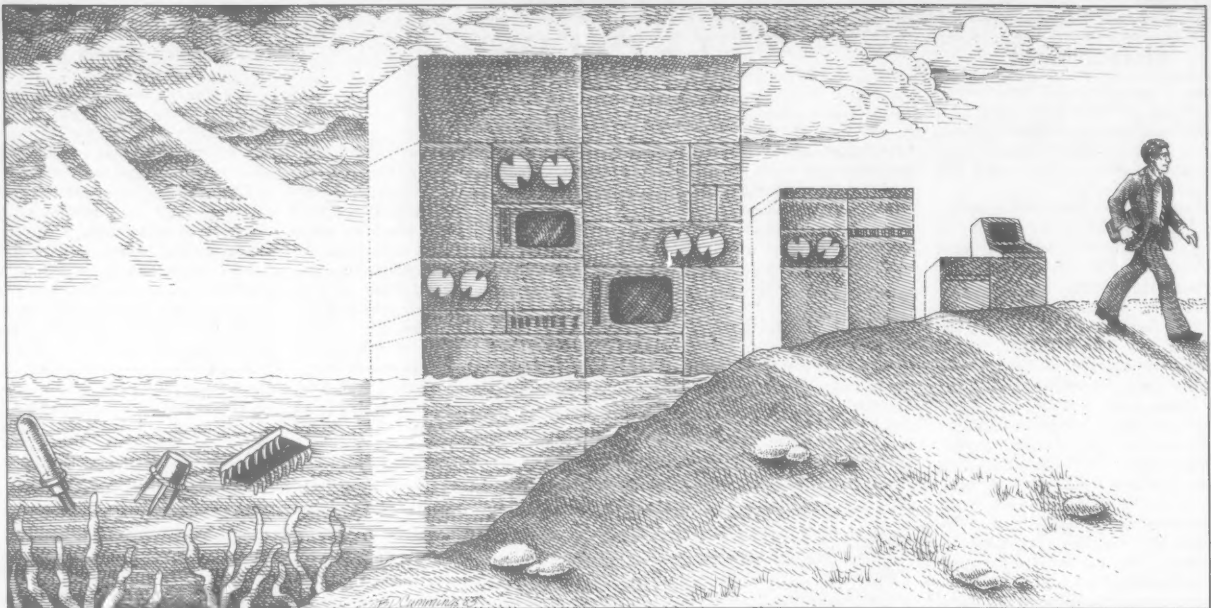
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Unleashes Data Dictionary's Information Tool Brightens Steel Firm's 'Black Hole'

By Paul Gillin
CW Staff

PITTSBURGH, Pa. — Data administrators at National Steel Corp. here are seeing the light in the "black hole" that often permeates the data dictionary. Since installing a tool for generating data dictionary reports in March, the data administration department has unleashed a wealth of information that previously was

unavailable, according to a data administration staff member.

National Steel is a producer of raw and finished steel products with divisions in Indiana, Illinois and Michigan. The corporate data center here houses an IBM 3081 and an IBM 3033 Attached Processor running IBM's MVS operating system with an IMS data base management system and IBM's TSO with Vtam files. About 150 ap-

plication programmers are employed here.

The department recently undertook a project to automate the data modeling process. The staff set up extensibility categories to represent different concepts within data modeling, such as identifying needed processes and activities and attributes in Cobol segments that relate to the steel industry, according to William Nowacki Jr., a systems programmer who recently joined data administration. The objective of the process was to determine automatically entity relationships in order to streamline the modeling process, Nowacki said.

The project was complicated, however, by the cumbersome coding of program access facility (PAF) routines, the Cobol or assembler interface that is used to extract information from the data dictionary. "Data dictionaries always suffer from the black-hole effect," Nowacki said. "You put the information in, and you never get anything good out of it, mostly because they have never really provided any kind of flexible reporting."

The department installed Draft from Data Relationships Software, Inc. of Pittsburgh. (Continued on Page 58)

Accounting Package Unveiled For Users of IBM VM/CMS

FALLS CHURCH, Va. — VM Software, Inc. (VMSI) has announced VMAccount, a usage accounting, invoicing, reporting and capacity management product for IBM VM/CMS users.

VMAccount is based on accounting systems used by VM time-sharing companies, a spokesman said. Features include user

budget cutoff; accounting and charging by project, product surcharging, installation-specific charging algorithms and prime time/non-prime-time pricing differentials. A variety of management reports are also provided.

VMAccount requires no modifications to VM and provides real-time validation of all accounting data and an audit trail, the spokesman said. It can accept input from all VMSI products.

The price is \$6,500 from VMSI, P.O. Box 9895, Vienna, Va. 22180.



At Hamilton Standard, programmers use a DBMS to track what the well-dressed astronaut will be wearing on the space shuttle. Story Page 59.

'UCC-CMI' Targets IBM DOS

DALLAS — University Computing Co. (UCC) has announced UCC-Customer Management Information (UCC-CMI), its Customer Information System for IBM DOS, OS and IMS environments.

UCC-CMI incorporates elements of the company's Customer Information File, Customer Profitability Analysis System and Customer Marketing Analysis System, a spokeswoman said. The product combines a complete Customer Information File with marketing and profitability analysis capabilities. The three components are integrated to synthesize information from sources throughout an institution.

The product can be integrated with any existing applications, the spokeswoman said. The product is compatible with UCC-Context Management Systems, Inc.'s MBA, a decision support system for the IBM Personal Computer that expands UCC-CMI capabilities to include modeling, graphics, text processing and data

communications.

UCC-CMI will be available in September. It costs \$118,000 for OS and IMS versions and \$115,000 for the DOS version from UCC at UCC Tower, Exchange Park, Dallas, Texas 75235.

'Easel' Converts Touch Commands Into Machine Code

WOBBURN, Mass. — Interactive Images, Inc. has announced a software facility that allows users to create and manipulate application programs by touching visual images on a video screen.

Called Easel, the product reportedly may be combined with the company's microprocessor-based touch-sensitive color (Continued on Page 57)

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'Easel' Allows Program Manipulation by Touch

(Continued from Page 55)

graphics system or ported to other hardware and software environments.

Developed on a Digital Equipment Corp. VAX-11/750, Easel is an interface between the user and the computer that translates an application's output into images and converts the touch commands into machine-readable code, a spokesman said. The interface is transparent to

Printer Manager Released For IBM VM-SP

DOWNERS GROVE, Ill. — Autovative Computer Extensions, Inc. has announced ACX-PM, a printer manager package for users of IBM's VM-SP operating system.

Designed for use with IBM 3270 series printers, the package extends class and forms control support to small printer networks in an IBM VM-SP environment. In addition, the ACX-PM package provides native support for Xerox Corp. Diablo letter-quality printers in the network. This allows asynchronous printing from an IBM mainframe, the vendor said.

All printers, commands, queries and print files are managed by a disconnected service machine. File transfers are accomplished through normal VM-SP spooling. All activity is logged, and appropriate parties are notified of a printer error or idle conditions. Users are informed of the activity of their print files and may query the system, printer or file status at any time. Users may also manipulate fields without affecting other files, the vendor said.

The package costs \$4,000 for the first-year license. The renewal rate is half the current first-year license fee, Autovative Computer Extensions said from Suite B, 5120 Belmont Road, Downers Grove, Ill. 60515.

CICS Print Tool Gets Upgrade

POULSBO, Wash. — Software Technology, Inc. has announced a new release of its IBM CICS Print Facility for IBM and plug-compatible mainframes.

Release 3.0.0 is said to offer menus, index functions and index security for users. Programmers reportedly have gained such functions for spooling reports as array mode, append function, automatic ENQUEUE and DEQUEUE and direct spooling.

The system administration function is said to feature additional tables, automatic aging of reports, sync point and recovery restart and blocking of data from batch sources.

For IBM MVS systems, a permanent license costs \$15,000 including one year of maintenance. For IBM DOS/VSE accounts, a license costs \$7,500 including one year of maintenance. Software Technology can be reached through P.O. Box 1110, 5492 N.E. Laura Court, Poulsbo, Wash. 98370.

the computer, and applications can be created and manipulated without modification, according to Carl W. Schwarcz, director of software for Interactive Images.

The nonprocedural, event-driven facility uses an English-language format. By touching the screen, the user can execute commands, perform data base inquiries, manipulate text, call and manipulate graphics displays and create simple applications without using a keyboard, Schwarcz said. Data can be selectively downloaded from the mainframe for manipulation on the Easel workstation.

The product provides overlaid areas or windows that can contain detailed drawings. The color, size, position and contents of the display can

be altered using the touch-sensitive screen.

Although Easel's user interface resembles that of Apple Computer, Inc.'s Lisa, Schwarcz commented, "Easel can be run on several different systems with no defined standard on what the application can look like."

Easel is written in C language and uses the Unix operating system on a Motorola, Inc. 68000 microprocessor in the hardware configuration provided by Interactive Images. The software runs on any version of the 68000 microprocessor and any Unix-like operating environment.

The hardware/software configuration is available in two versions. The author station allows the user to

create applications or front ends to existing applications. The user system runs Easel front ends, but does not include development facilities.

The author station includes a touch-sensitive, 19-in. color video display with a resolution of 1,000 by 750 pixels, from 512K bytes to 8M bytes of dynamic random-access memory (RAM), 20M bytes of Winchester disk storage and 1M byte of floppy disk storage. The user station includes a 14-in. color monitor and from 256K bytes to 8M bytes of RAM. The author station is priced at \$19,900. The user station costs \$11,900. A single quantity price for the software is \$3,000.

Interactive Images is located at 21 Olympia Ave., Woburn, Mass. 01801.



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'Execute-Only Licensing' Works With Model Language

NEW YORK — Lloyd Bush & Associates has announced Execute-Only Licensing, a technique for distributing applications created on the company's Model language and distributing them to other computers that do not run Model.

Users can create interactive applications and convert them into self-contained object code for use on a system that does not have a copy of Model running, a spokesman said. Model runs on Digital Equipment Corp.'s VAX-11, Hewlett-Packard Co.'s HP 3000, Control Data Corp.'s Cyber series and

computers from IBM, Sperry Corp., Honeywell, Inc. and Perkin-Elmer Corp.

Model provides a decision support system environment including an editor, Help facility, diagnostic aids and English-like language for building applications. Analytical features include "what if" and forecasting.

The standard license fee for baseline Model on most systems is \$9,000; Execute-Only license fees start at 20% of the standard license fee per CPU. Lloyd Bush & Associates is located at 156 William St., New York, N.Y. 10038.

Printing System Updated

SANTA CLARA, Calif. — Memorex Corp. has announced Version 2.4 of its Distributed Printing System, adding menu-driven command processing to the software that controls local and remote computer output printing in the IBM MVS environment.

Version 2.4 of the printing system gives users full-screen implementation of commands and more than 100

messages to interpret IBM Vtm codes and facilitate problem solving. The release lets the user spool IBM CICS output, allowing CICS resources to answer other requests.

Reports can be spooled on IBM 3375, 3380 and compatible disk drives.

The software costs \$10,000 from Memorex, 3393 Octavius, Santa Clara, Calif. 95052.

Tool Brightens Black Hole For Firm's Data Dictionary

(Continued from Page 55)
burgh. Draft generates the PAF routines needed to produce data dictio-

nary reports. "It's got a two-to-three-week learning curve for a programmer, and it provides a very easy, flexible reporting mechanism," Nowacki said. "It enabled us to make the data modeling system viable."

Data administration now uses automated data modeling to identify the hierarchical structure needed for an application to be addressed by IMS.

These include the processes, sub-processes and activities that are performed and the screens and reports to be generated.

"We see hundreds of different data groups on hundreds of different reports," Nowacki said. "Because there's such a mass of information regarding different entities and relationships, it's too cumbersome to do by hand."

The department established nine extensibility categories in a network configuration including process, activity, information group, entity, attribute, organizational unit, process group, subject data base and auxiliary view. The program structure can be determined by calling the relationships from the data dictionary using Draft.

"By establishing relationships between them, we can do the analyses that will let us move from this model to an actual hierarchical structure," Nowacki said. "It also limits redundancy, and because we use edit lists when entering data elements into the attribute category, it helps adhere to standards."

The data modeling project is only the first application of the data dictionary now that Draft is running, Nowacki said.

The company recently bought Spectrum-2, a systems development/project management tool from Spectrum International, Inc. "We're looking at possibly putting the forms Spectrum designs in the data dictionary and having this done on-line rather than using a paper-shuffling system," he said.

"We see avenues opening up all over the place for use of the data dictionary because we have a flexible reporting tool."

The data administration department currently has three people coding Draft programs to answer requests.

Because Draft has only been running for four months, "we spend most of our time in a 'what if' mode, producing glossary reports for applications programmers," he said. "These are the kinds of questions we try to answer to sell our service to the corporation."

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'Challenger' Space Suit Parts Tracked, Tested Via DBMS

HOUSTON — Before the astronauts stepped out of the space shuttle *Challenger* last April to take the first American space walk in nine years, the space suits they wore were subjected to a battery of tests and modifications.

The status, location and quality control procedures of the component parts of the space suits on which the crew's lives depended were tracked via a relational data base management system (DBMS).

United Technologies' Hamilton Standard Division, the prime contractor for this part of the mission, used Oracle Corp.'s Oracle DBMS to design and implement the initial version of the tracking system, under the direction of Senior Systems Analyst Gilberto Garcia.

The system monitors equipment from the original manufacturing, through pretesting and the flight itself, to post-flight disassembly and reassembly in preparation for use.

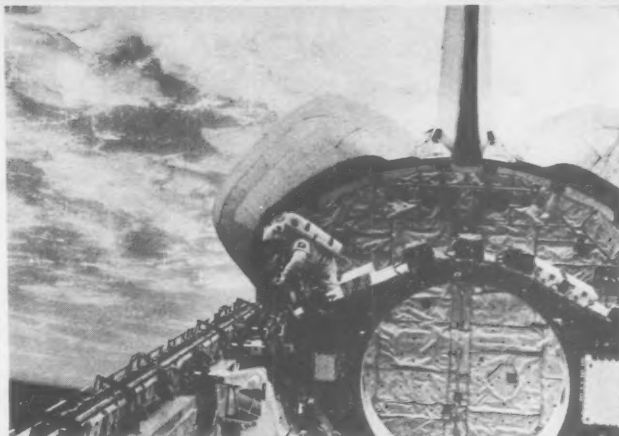
After a shuttle lands, Hamilton breaks down all gear for reuse. Some components may be shipped back to their manufacturer and then returned for reassembly. Yet the engineering staff must at any time be able to ascertain the status of any component or subassembly, including all test results. Because a discrepancy report on a single item may well have repercussions for the larger design, the report system handles a data base of formidable complexity: 50,000 records and 50 tables comprised of as many as 20 columns.

The Houston-based system, which consists of a Digital Equipment Corp. VAX-11/780 and the Oracle DBMS, becomes a central clearing house for information from many sources, according to Donald McLain, manager of the data processing group. Information originates from test centers at

Cape Kennedy in Florida, from the center, from outside laboratories of the National Aeronautics and Space Administration's choosing and even from space. All of this data must be written up, entered and tracked.

Generated reports including shipping deadlines, instrument calibrations, qualification lists for the "flight buildup" list and test readiness review sheets that McLain describes as one of the most critical functions that the Oracle DBMS performs. "Ultimately, the final decision regarding the readiness of a flight is based in part on this data. It is therefore vital that the DBMS perform

(Continued on Page 62)



Astronaut Story Musgrave outside the space shuttle is protected by a suit manufactured to Nasa specifications by Hamilton Standard.



Gilberto Garcia works with Sharon Connors on an entry screen, part of the hardware tracking system.

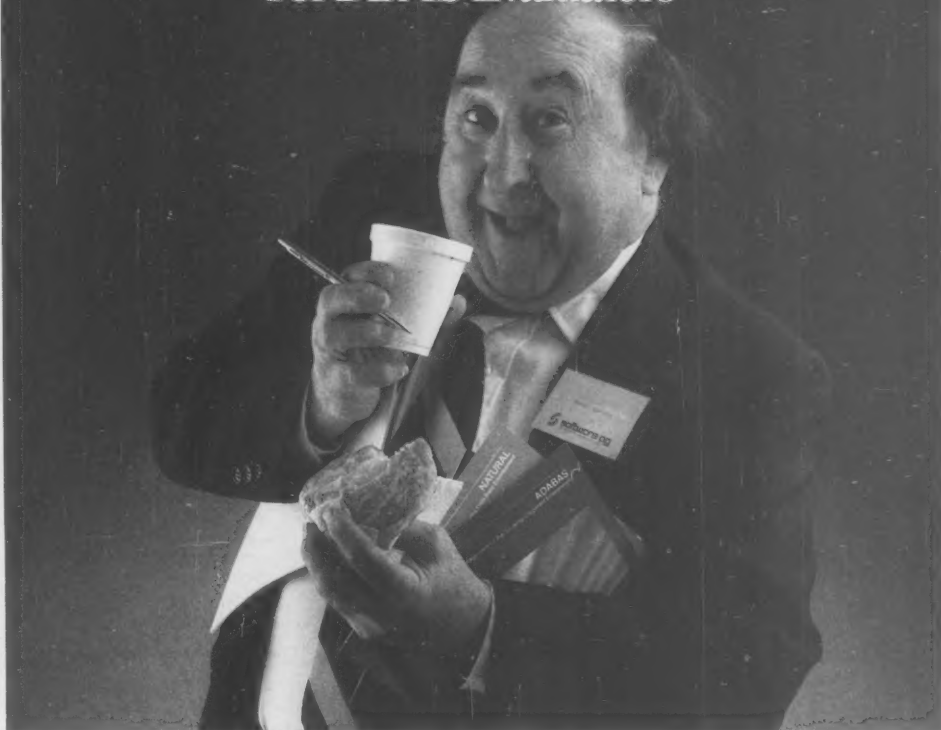
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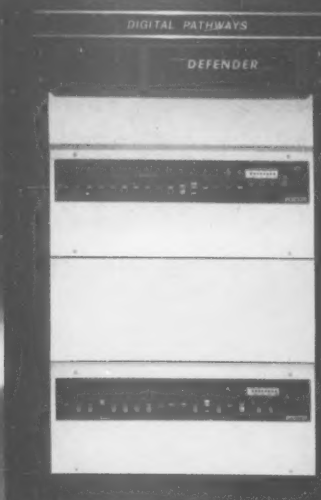
Then, it provides what is probably the most significant advance in computer access security. The Defender searches its database for that ID code, then automatically calls the user back at the one telephone number authorized for that code. Even if an unauthorized

user does manage to break the log-on procedures, he must also be physically located at the telephone number which corresponds with the user's ID code — a highly unlikely occurrence.

The Defender installs on any host computer, with no software or hardware modifications. It uses Racial-Vadic's advanced "Multiline Automatic Calling System," which can accommodate up to 59 simultaneous users — at speeds up to 9600 bps.

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From Quasar

Product Trio Targets HP 3000

OTTAWA — Quasar Systems, Ltd. has announced a series of products for the Hewlett-Packard Co. HP 3000 computer.

Multiview AP is an accounts payable system that is a companion product to Quasar's Multiview General Ledger (GL). The package offers on-line inquiry of accounts payable information and multiple-view features that are compatible with Multiview GL.

Flexible-payment strategies are possible with an override feature built in. Transactions can be viewed immediately. The product supports interactive payment management, immediate validation of entries, protection against duplicate entries and

standard or user-defined default values, a spokeswoman said. The price of Multiview AP is \$12,000. Multiview GL is priced at \$18,000.

Powerplan is a decision support package which, in its full configuration, has financial planning features that include networks of facts, figures, formulas and formats; an interface to data files in Quasar's Powerhouse application systems; graphics; direct report referencing; built-in financial functions; report consolidation; automatic report production; and advanced spreadsheet capabilities, the spokeswoman said.

Single reports are placed in a network or on-line library of reports that can be retrieved at any time. The components of each report are saved as a set of reusable parts. The base module is Powerplan-Executive, which is priced at \$5,500. Optional modules include Powerplan-Plus, priced at \$4,750; Powerplan-Fastplan, priced at \$4,750; and Powerplan-Decision Support Graphics (DSG) Link, which provides an interface to HP's DSG graphics software and is priced at \$2,000. All four modules can be purchased for \$15,000.

Dictionary Plus is a data dictionary that encompasses an enhanced version of Quasar's Qschema data dictionary and/or an interface to HP's Dictionary/3000. The package also includes a set of dictionary management utilities, the spokeswoman said. Features include centralized data definition; support for all HP 3000 file and data types; full commercial data formatting; file- and element-level security and application-wide standards.

The price is \$3,000 for either a version containing Qschema or a version including an interface to Dictionary/3000. The price for a package with both capabilities is \$5,000.

Quasar is located on the 10th Floor, 275 Slater St., Ottawa, Ont. K1P 5H9.

Programs Fit Sperry CPUs

EVANSVILLE, Ind. — Facilities Management Group has announced Dokproc, a set of on-line programs for Sperry Corp. mainframes in Sperry's Information Management System communications environment.

Dokproc performs document processing functions at any terminal within a system, a spokesman said. The system is implemented with two commands which provide the options to prepare the status of the document file and maintain forms within the system and to provide the options to print the form and enter variable data.

Documents are stored in the Dokproc file and can be recalled and merged into a form's text during printing as specified by the user, according to the vendor.

The monthly rental fee is \$25 with a three-month minimum. Facilities Management Group can be reached through P.O. Box 3044, Evansville, Ind. 47730.

Geisco Upgrades IBM 3270 Support Capability

ROCKVILLE, Md. — General Electric Information Services Co. (Geisco) has enhanced its IBM-compatible Mark 3000 service to provide broader support for users requiring IBM 3270 full-screen CRT capability in a teleprocessing network.

Geisco is offering IBM's CICS transaction processing monitor and

3270 CRT support enhancements to clients using a wide range of CRT devices.

According to a spokesman for the vendor, the enhancements include:

- 3270 Network Services to enable attachment of IBM CRT and 3270 plug-compatible devices directly to the Geisco network.

• IBM 3270 service for Ascii CRT terminals reportedly designed to provide full 3270 functionality support.

• Systems Network Architecture/Synchronous Data Link Control Dedicated Access Service on point-to-point, multidrop and domestic dial-up basis for IBM 3270 CRT terminals operating at 9,600 bit/sec in the U.S.

• CISC — CICS Inter-System Communications service, which the vendor spokesman said is able to enable CICS applications running on the service to communicate directly with the customer's in-house CICS operations on a real-time basis.

• Virtual System Service, which provides a fixed block of processing capacity from Geisco to complement the functionality of the user's in-house computer system for a fixed monthly price.

Services are billed on an as-used basis, according to a spokesman for Geisco.

Further information is available from Geisco, which is located at 401 N. Washington St., Rockville, Md. 20850.

'Dbcopy II' Enhanced for HP 3000 Users

BUFFALO, N.Y. — Bradmark Computer Systems, Inc. has announced new features for its data base utility used on the Hewlett-Packard Co. HP 3000 computer.

Dbcopy II now has the capability to restore a full data base or a root file and specified data sets from a store or sysdump tape to a desired group or account.

Additional capabilities reportedly have been incorporated into the alter feature of Dbcopy II. The feature's capabilities are said to allow the transformation of zoned decimal fields and packed decimal fields to character or integrated fields within

the receiving data base, according to a vendor spokesman.

Dbcopy II sells for \$3,000. More information on the utility enhancements is available from Bradmark Computer, which is located at 4446 Main St., Buffalo, N.Y. 14226.

Oxford Boosts Performance Of 'UFO'

HASBROUCK HEIGHTS, N.J. — Oxford Software Corp. has announced Release 2.4.2 of its User Files On-Line (UFO) on-line application development system for IBM's CICS and IMS/DC environments.

The release features performance improvements of up to 20% over the previous release, a spokesman said.

Other enhancements include:

- Additional sample programs for programmer reference.
- Greater flexibility of the Executive Inquiry facility.

- Additional diagnostics for application debugging.

- Additional CICS On-line Security System (Coss) security of individual UFO files allocated on-line in the CICS environment only.

The release of UFO/CICS also includes Oxford's Squeeze data compression package. The product is said to reduce on-line terminal response time up to 25%.

UFO is priced at \$24,000 for IBM's DOS operating system and \$33,000 for IBM's OS operating system. Oxford is located at 174 Boulevard, Hasbrouck Heights, N.J. 07604.

Generator Fits IBM Datamaster

SOMERVILLE, Mass. — Williams Associates has announced AR Plus, a report and address label generator enhancement for IBM's accounts receivable (AR) package on the System/23 Datamaster.

AR Plus generates three types of printed output. Customer lists print alphabetical listings of all the customers in the AR data base. Label programs print address labels in several formats. Sales reports provide a printed recap of each customer's purchasing activity for the period and for the year. Sales reports can also be printed in ranking order, a spokesman said.

AR Plus costs \$250 from Williams Associates at 16 Main St., Somerville, Mass. 02145.

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Instruction Package Covers Unix

Bell Labs Programs Help Edit Written Material

SHORT HILLS, N.J. — Western Electric has announced a set of computer programs that reportedly can be used like an editor's blue pencil.

Unix Writer's Workbench is software developed at Bell Laboratories to assist writers in editing manuscripts and improving the quality of their writing. Western Electric also will offer Unix Instructional Workbench Software, a set of programs that provides computer-assisted, self-paced instruction on the fundamentals of Unix System V, the first supported version of the Unix operating system.

Both packages are available for systems running under Unix, includ-

ing Digital Equipment Corp.'s PDP-11 and VAX-11 series. The two packages are the first applications programs to be licensed by Western Electric for use with Unix operating systems, the vendor noted. The software packages will only be supported by Western Electric under Unix System V.

Writer's Workbench programs fall into four major categories: proof-reading, style analysis, information and utility programs that reportedly allow writers to tailor the system to meet specific needs. The Instructional Workbench software currently consists of four Unix operating system training courses, along with the

facilities for their delivery, maintenance and administration. The courses include fundamentals of the Unix system, training in advanced text editing and two courses on document formatting techniques.

Both packages will be available July 15. Writer's Workbench can be licensed for \$4,000 for the first CPU

and \$1,600 for each additional CPU in the same site. Educational discounts are available. The Instructional Workbench carries a \$2,500 per CPU license fee. Binary licenses only are available. Further information can be obtained from Bell Laboratories, 150 John F. Kennedy Parkway, 3G-237, Short Hills, N.J. 07078.

Accounting Tool Runs on OS3

DALLAS — Systems Organization Services, Inc. has announced Olds/80, an integrated and on-line distribution and accounting package for

Sperry Corp.'s OS3 Release 7.1 operating system.

Designed for warehousing and distribution markets, the product includes modules for order entry, purchase/work orders, electronic mail, inventory, accounts payable, accounts receivable and general ledger. Users can retain centralized control with decentralized accounting.

Each module costs \$7,500 from Systems Organization Services at Suite 117, 9304 Forest Lane, Dallas, Texas 75243.

DBMS Tracks Component Parts Of Space Suits

(Continued from Page 59)
precisely," he explained.

The quality assurance process involves a massive data base that, at the record level, contains each constituent part listed by a unique serial number and by a drawing number that identifies its membership in a larger subassembly. In addition, an extensive performance and manufacturing history, amassed over the product's life, also is entered and tracked. According to Garcia, the challenge is not merely to maintain this data, but to be capable of querying it properly in meaningful ways.

"In a hierarchical or network structure, you must presuppose how the data base will be queried because the relationship between record levels is fixed. By contrast, a relational system is extremely fluid, and we can keep adding related data without having to rewrite code."

The Oracle system includes IBM's Structured Query Language (SQL) to create such tables, modify them and pull information out based upon specified criteria. The data base administrator at Hamilton's Houston office uses SQL to specify the structure and content of a data base. Entry screens are created using Oracle's Interactive Applications Facility or DEC's Forms Management System utility on the VAX system. From here, SQL statements embedded in a host Fortran program are used to query the data base, and the final reports are generated in Fortran.

In addition to hardware tracking, Hamilton Standard has implemented a management support system to track man-hours by project. Finally, the group has developed several independent applications, such as a system to track the calibration of Hamilton Standard's innumerable testing devices.

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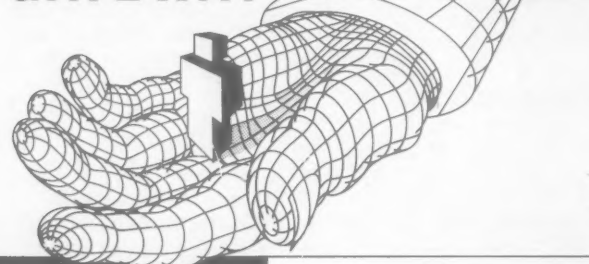
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For Prime 50 Series

C Language Compiler Out

NATICK, Mass. — Prime Computer, Inc. has announced a C language compiler for its Prime 50 series of minicomputers.

The compiler provides compilation speeds of up to 5,000 line/min, interactive debugging support and syntactic error recovery, a spokesman said.

The compiler also provides flow control and data structures and a full set of operators and data types. Other features include separate compilation, data sharing and data initialization, the vendor said.

The compiler reportedly provides library calls that are similar to those of the Unix system and access to Prime's standard library calls.

The compiler is used with Prime's Primos operating system and the company's Source Level Debugger to improve times for creating, editing, compiling, executing and testing programs, the spokesman said. The compiler also utilizes Emacs, an in-

teractive full-screen display editor. Emacs allows the user to compile source code without leaving the editor, disrupting the screen or leaving the routine being debugged.

Prime's Command Procedure Language (CPL) can also be used to allow sequences of operating system commands and CPL directives to be stored in a command procedure file that can be executed by specifying the file name.

The interactive compiler is priced at \$7,500 per license. The execute-only version costs \$3,000. Both will be available in December. Prime is located at Prime Park, Natick, Mass. 01760.

'Q-Assure' Fits HP 1000, 3000

WILMINGTON, Del. — Data Base Logic, Inc. has announced Q-Assure, a post-manufacturing quality assurance information package for Hewlett-Packard Co. HP 1000 and HP 3000 processors.

The package enables manufacturers to compile production, service and warranty information. Features include the ability to develop ad hoc reports; a menu-driven format; and the ability to assemble comprehensive information such as performance ratings, failure statistics, warranty reports and service time/cost data, the vendor said.

Q-Assure is equipped with an HP Image data base. The package is written in Pascal, programmed in English, and consists of update and report programs which each program displays as prompts and Help messages to assist the operator, the vendor said.

In the update mode, operators can perform any of four functions related to such data items as customer service representative, product name, report date and quality rating. In the report mode, Q-Assure maintains and prepares reports on customer service information that falls into 20 categories, including installations, assembly performance, accelerated aging, customer warranty, product discrepancy and service time details, the vendor said.

The HP 1000-compatible version of Q-Assure costs \$7,500. The HP 3000 version costs \$10,000. Data Base Logic is located at Suite 88, 1601 Concord Pike, Wilmington, Del. 19803.

Text Editor Developed In Fortran 77

EVANSTON, Ill. — Schonfeld & Associates, Inc. has announced Uni/Edit, a universal text and program editor written in Ansi Fortran 77.

The package will reportedly operate on any processor or operating system. The vendor claimed that DP shops with different machines or systems software can increase user productivity by installing one editor on each system. The Uni/Edit package is said to be a line editor with a virtual page format and is compatible with all dumb terminals.

Features include a natural syntax, a pocket-size user's manual, an on-line Help tutorial and left and right tab column alignment. On systems that proliferate files, Uni/Edit can save space because it updates files without creating new versions, unless directed to do so by the user. The package can also perform file compression, the vendor said.

The package costs \$800 for the first CPU and \$400 for each additional CPU. Perpetual and three-year licenses are also available along with a 40% discount for educational institutions. Schonfeld & Associates is located at 2550 Crawford Ave., Evanston, Ill. 60201.

Burroughs Users Get Tools

VIRGINIA BEACH, Va. — Data Resources, Inc. has announced three vertical-market software packages for users of Burroughs Corp. B800, B90, B80, B900 and CP9500 computers running the CMSMCP operating system.

The Property Management/Real Estate Sales System features real-time property management for multiple users, a spokesman said. Modules include general ledger, accounts payable, accounts receivable, mortgage insurance, home-owner's insurance, payroll and real estate sales reporting.

Object code alone reportedly costs \$5,995, with source and object code priced at \$17,500.

Wholesale Dairy Products Distribution or Wholesale Food Distribution include route sales, distribution inventory control, purchase orders, invoicing, remote order entry, accounts payable, accounts receivable, payroll and general ledger. The object code for either package costs \$7,995, with source and object code priced at \$17,500.

Data Resources is located at Suite 111, 4176 S. Plaza Trail, Virginia Beach, Va. 23452

DG Updates Business Basic, Releases Dictionary, Writer

WESTBORO, Mass. — Data General Corp. has announced enhancements to its interactive Business Basic language. The vendor also announced a data dictionary and report writer for use with Business Basic.

The enhanced Business Basic is available as Revision 7.00 for DG's DOS and Rdos operating systems and Revision 3.00 for DG's AOS and AOS/VS operating systems, according to a spokesman for the vendor.

Enhancements to Business Basic include:

- Logical file data base structure, designed to handle logical subsections to increase access to files.
- Print spooling facility permits users to intercept spooling and supports multiple printers.
- I/O calls which, when combined with some recoding of existing programs, may improve performance.
- Increased utilities, subroutines and statements.

The data dictionary is a set of interactive programs that allow an applications developer to create and maintain descriptions of the data used by an application, the spokesman said.

A programmer can use the product to create a data dictionary, specifying file, record and data field definitions. The data dictionary is a prerequisite for the report writer.

The report writer employs

prompts to specify data items, selection criteria, sort order and formatting information.

The enhanced Business Basic costs \$5,400. The data dictionary license costs \$1,000, while the report writer costs \$2,000, according to the DG spokesman.

Data General is located at 4400 Computer Drive, Westboro, Mass. 01580.

S/SE Announces Update of 'Trac'

MOORESTOWN, N.J. — Systems Software Engineering, Inc. (S/SE), a division of International Software Products, Inc., has announced an updated release of its TSO Resource Allocation Control (Trac) package for users of IBM's TSO.

Trac provides control of a data center TSO user community by limiting logon access to a specific number of sessions defined for a department or location.

According to a spokesman for the vendor, the new release provides enhanced capabilities for defining those user groups.

Enhancements to the package include an internal redesign that reportedly makes the package more efficient, increased flexibility in a multiple-CPU environment, more flexible macros to generate the Trac options and enhanced commands for dynamically modifying Trac

parameters, the spokesman for the vendor said.

The Trac package is used as a front end to TSO logon files and is compatible in all TSO environments, according to the spokesman.

The package is currently available on a 30-day free trial basis. The price of Trac is \$6,500 until Aug. 1.

More information is available from S/SE at 304 Harper Drive, Moorestown, N.J. 08057.

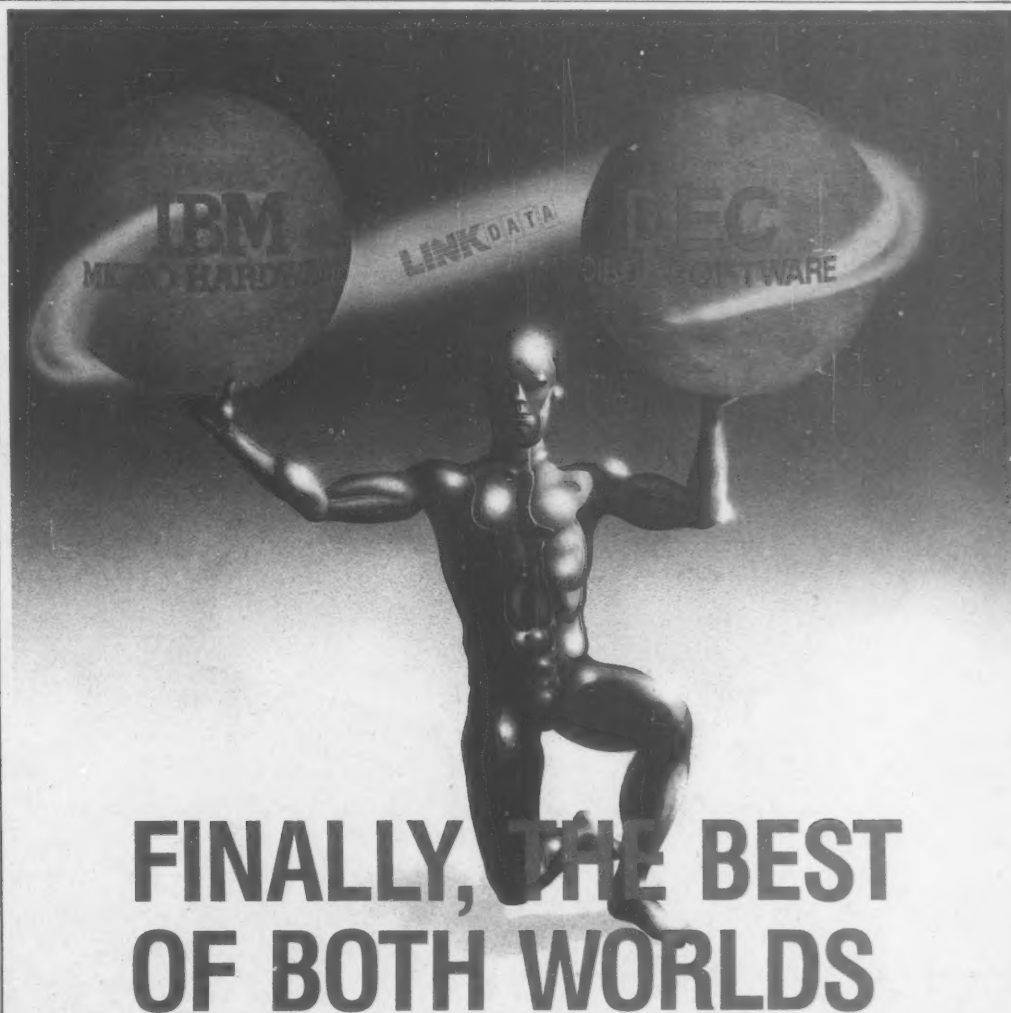
MLCS Out For HP 3000s

RICHARDSON, Texas — Symbolics Financial Systems, Inc. has announced a version of its Mortgage Lending Control System (MLCS) for Hewlett-Packard Co.'s HP 3000 minicomputers.

The HP 3000 version provides a full implementation and functionally compatible version of the loan processing and marketing components of the company's IBM 4300 release of MLCS.

Base price for the system is \$65,000 or \$2,500/mo from Symbolics at 1740 N. Collins, Richardson, Texas 75081.

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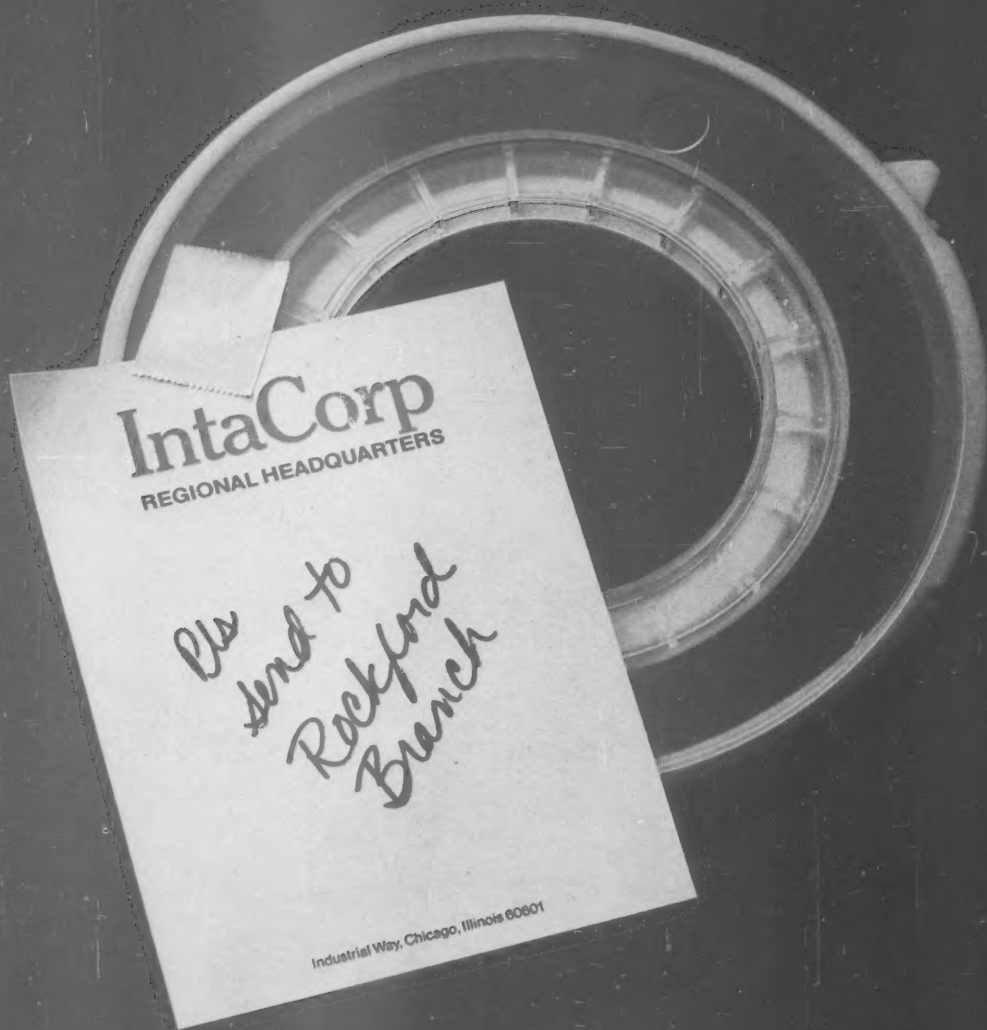
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pages. Ask for a Business Computer Specialist. Or write to Tom Rappath, Hewlett-Packard, Dept. 03183, 19447 Pruneridge Avenue, Cupertino, CA 95014. In Europe, write to Henk van Lammeren, Hewlett-Packard, Nederland B.V., Dept. 03183, P.O. Box 529, 1180 Amstelveen, The Netherlands.



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HP 3000 Gets Accounting, Inventory Packages

CHICAGO — Abacus Data Systems, Inc. has announced accounts payable, inventory management and physical inventory control packages for the Hewlett-Packard Co. HP 3000 line of processors using HP's Image data base management system.

The accounts payable package, called Ezpay, supports multiple companies and locations in one data base. All transactions are driven by interactive user menus. Vendor inquiry can be made by account number, vendor name or Zip Code. The package can process advance, on-account or partial payments as well as manual checks. Vouchers can be selected for payment processing either by specifying a due date for the entire package or by selecting individual

vendors. For each vendor, any or all invoices can be chosen, or due dates can be used as a selection guideline. The package costs \$4,200, the vendor said.

The inventory management and physical inventory control packages, called Ezstock and Eztag, respectively, are designed to accommodate single or multiple warehouses and locations.

On-line transactions processed by Ezstock include inventory receipts, issues (sales), returns, transfers and adjustments. Ezstock keeps track of quantities moving in and out of quality control, and all transactions are logged to provide an audit trail and means of recovery. Other features include purchase order control, multi-

ple units of measure, order quantity computation, low stock alert and product listing. Ezstock costs \$4,800, the vendor said.

Eztag is a year-end physical inventory management and cycle count

control package that requires no modification in the user's inventory package. Eztag is priced at \$1,800, according to Abacus Data Systems at 5000 W. Bloomingdale, Chicago, Ill. 60639.

Pro-IV Application Processor Fits DEC PDP-11 Minis

MAYNARD, Mass. — Digital Equipment Corp. has announced the availability of Data Technical Analysts, Inc.'s Pro-IV application processor on DEC's PDP-11 minicomputers running DEC's RXS-11M, RSX-11M-Plus and RSTS/E oper-

ating systems.

Pro-IV software is an operating subsystem that allows a systems analyst without specific hardware or operating system expertise to build applications, a spokesman said. The product processes application programs by linking runtime modules selected according to the user's application specifications and limits.

The package contains more than 100 memory-resident, reentrant runtime modules precoded in machine language and encompassing basic functions and routines. Programming is performed by a series of menu-driven, interactive steps that set up data bases, create screen formats for data entry and define output reports. The software automatically checks program interfaces, program control logic, data base structure and application consistency, the spokesman said. A data dictionary facility is included.

The full development package, including all modules necessary to develop, test and modify applications, costs \$10,000. A runtime package, which allows a PDP-11 system to run existing Pro-IV application programs, costs \$1,000. Both products are available for August delivery from DEC, Maynard, Mass. 01754.

'Salespower!' Offers HP 3000s Marketing Aid

NEWTON, Mass. — Computer Solutions, Inc., maker of computer systems for high-technology manufacturers, has announced marketing management software for Hewlett-Packard Co.'s HP 3000 system that can be integrated with a manufacturing and financial control system.

The menu-driven Salespower! module is said to enable nontechnical executives and administrators to file and manipulate such marketing data as sales records, prospective customer information and lead and quote activity.

Salespower! is available as part of the firm's integrated FM/3000 productivity system for the HP 3000. It takes advantage of FM/3000's Browse function, which provides alphabetical or numerical scrolling of all information stored in Salespower! files, as well as all files throughout FM/3000. Salespower! is available as a modular, stand-alone applications software package or on a time-sharing basis.

Alone, the package costs \$20,000, while the FM/3000 system, excluding hardware, starts at \$50,000. Computer Solutions is located at 950 Watertown St., Newton, Mass. 02165.

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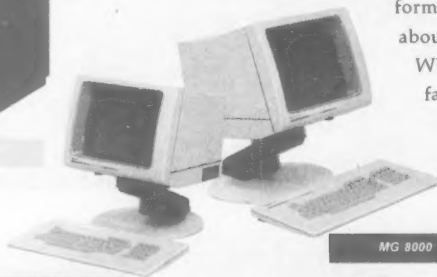


9 programming languages, as well as word processing, data base management systems, a virtual electronic spreadsheet, and the WISE authoring system. This is per-

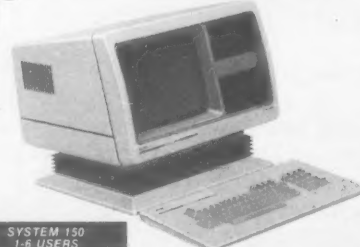
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Micronotes

Management Analytic Support, Inc. (MAS) has announced a software package said to allow the encryption of data and programs on the disk itself.

Vault is said to ensure that, even if the disks are stolen and force-read, the information is safely locked in from the inside. Messages, data or software may be encrypted, then sent to another computer over telephone lines.

Vault runs under the UCSD Psystem on Sage Computer Technology's II and IV multiuser microcomputers. Vault alone costs \$395. For \$4,999, buyers receive a Sage system including 128K bytes of parity random-access memory and one 640K-byte floppy disk drive. Digital Research, Inc.'s CP/M-68K costs an additional \$350. MAS is located at 6826 Dean Drive, McLean, Va. 22101.

The National Aeronautics and Space Administration's software dissemination center has announced public availability of a Software Design Analyzer System.

Crisp80 is a set of programs comprising a software and documentation tool that reportedly supports top-down, hierarchical, modular, structured design and program methodologies. The Crisp80

system is written in Microsoft Corp.'s Basic-80 for interactive execution on a Zilog, Inc. Z80-based microcomputer operating under Digital Research, Inc.'s CP/M operating system.

Price for the source code on an 8-in. diskette is \$370; supporting documentation is \$24 from Cosmic, located at 112 Barrow Hall, University of Georgia, Athens, Ga. 30602.

Histogram Utility Serves System/38

OAK BROOK, Ill. — Michaels, Ross & Cole Ltd. has announced MRC-Grapher, an end-user-oriented histogram utility for the IBM System/38.

The package can access information in up to eight files at one time. Histograms are generated on-line with a print function capability. Features include help key support, interpretive design, shared-access paths, multilevel and multikey capability, automatic scaling with manual over-

rides and self-documentation.

The package can be combined with other packages in the MRC-Query series, including MRC-Diction-

nary, MRC-Retriever and MRC-Reporter. Each module costs \$1,140 from Suite 501, 1301 W. 22nd St., Oak Brook, Ill. 60521.

Runs Under VMS, RSTS/E

Security Utility Fits DEC

PROVO, Utah — Clyde Digital Systems, Inc. has introduced a security utility for Digital Equipment

Corp.'s VMS and RSTS/E operating systems.

Called Lock, the product allows the system manager to limit a set of users to a unique menu of authorized programs, the company claimed. The system also generates menus and produces a program-by-program report file of all user activity.

When the user logs in and enters a secondary password, a menu of authorized programs is presented, a spokeswoman said. The user can only run programs shown. The system manager can define different passwords within an account and associate them with individual users.

A report file dynamically records all programs run on the system. Information includes program name, run account, user name, keyboard number, time run and run time.

Lock costs \$850 from Clyde Digital Systems at Suite 3E, 3707 N. Canyon Road, Provo, Utah 84604.

Accountants, Lawyers Get Job Costing

PHILADELPHIA — Orion Software, Inc. has announced Glowspn, an open-item, work-in-process practice management system for the accounting and legal professions. The package runs on Point 4 Data Corp.'s Iris and Boeing Computer Services Co.'s Bits operating systems.

Glowspn provides full job costing with budgeting, accounts receivable, production control and historical reporting. The job scheduling and job-costing capability allows the tracking of open jobs to be broken down into as many as 99 component phases. The history option provides historical analysis of production for estimates on jobs.

The system can maintain multiple sets of books for individual or subsidiary offices, can be interfaced to a general ledger and provides for an unlimited number of write-up/write-down categories. Other features include: write-up and write-down can optionally be applied to employees; information can be retrieved or reported by client, billing family, partner, team, employee or department; and up to five billing rates can be applied per employee.

The system requires 64K bytes of random-access memory and 10M bytes of disk storage. The price is \$4,500 from Suite 910, Lafayette Building, 5th & Chestnut St., Philadelphia, Pa. 19106.

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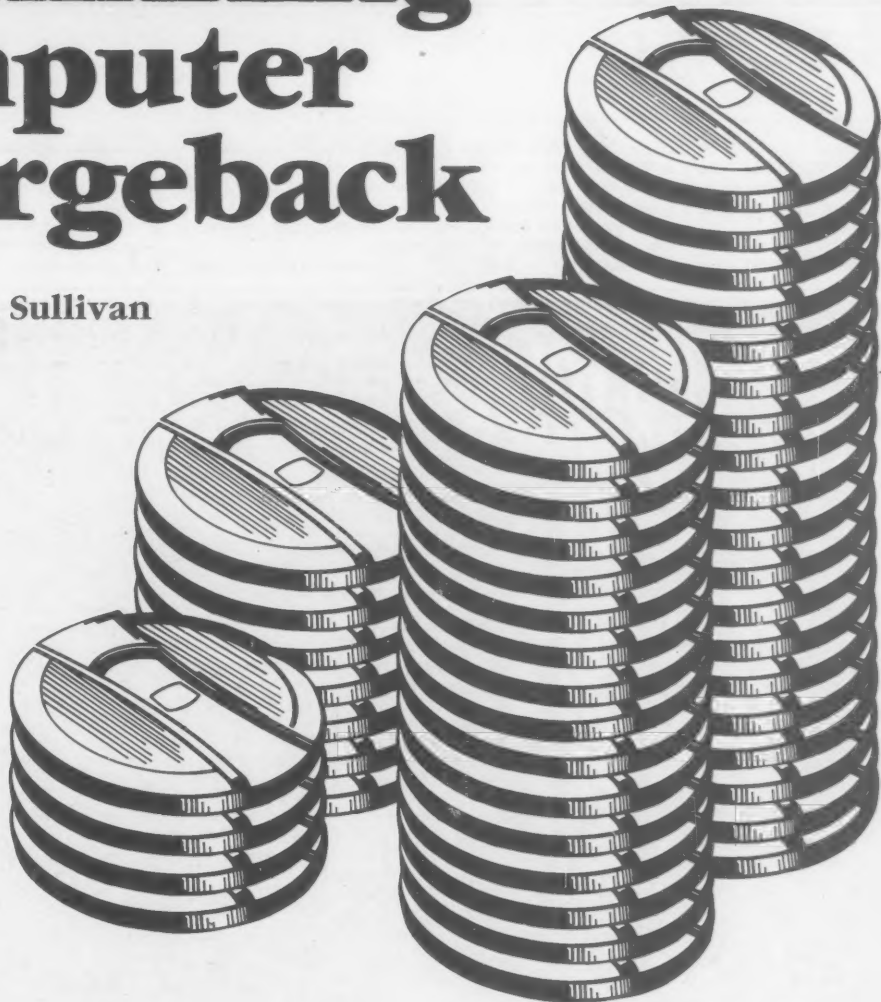


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Rethinking Computer Chargeback

By Kenneth M. Sullivan



'The data processing center is becoming a data storage center . . . There is no choice but to adopt new, simplified computer accounting that charges for the value of information rather than for use of CPU cycles.'

In the mid-'70s, determining how to charge back for computer use was easy. The CPU was the largest component of an installation's cost, so the user could be charged for the CPU cycles he consumed. Charging for CPU use was a reasonably equitable form of accounting.

But the average installation now has disk storage expenses that equal the investment in mainframes. And all other operating costs — for peripherals, software, supplies, labor, facilities and general company overhead — have skyrocketed. Basing a computer chargeback scheme on mainframe usage is no longer equitable.

Without even counting the effects of inflation, one dollar's worth of computer power in 1978 can be purchased for 25 cents today. In 1978, a fully configured 8M-byte IBM 3033 cost \$4,250,000. It had a processing speed of about three million instructions per second (Mips). Today, an upgraded 8M-byte 3033 with a speed of about 5 Mips can be purchased for \$1,690,000. Or, a more advanced mainframe, the 3083, with memory of

IN DEPTH

RETHINKING CHARGEBACK

In Depth/2

IN DEPTH

16M bytes and a speed of 10 Mips, costs \$3,260,000. The cost per million instructions has improved by a factor of 4.3:1 in five years.

In 1978, 200 million bytes of data could be stored on a

single IBM 3033 Model 1 disk for \$16,200, or \$83 per megabyte. Today, 2.5 billion bytes of data can be stored on a 3380 module for \$86,000, or \$34 per megabyte. In this case, the ratio is 2.4:1, or

roughly a halving of cost.

But while CPUs got cheaper in real terms, disk units merely improved their performance per invested dollar.

The cost per physical spin-

dle of disk continues to escalate.

In the past five years, disk storage has been identified as the fastest growth area in large-scale computing. Surveys conducted by IBM and

other disk manufacturers indicate that the average processing center has seen data storage requirements grow by 40% to 60% per year since the mid-'70s. The need for additional data storage has therefore offset the savings gained by improved technology.

Along with changing the cost characteristics of computing, silicon chip advancements have also modified machine room layout and the way systems are operated. While CPUs no longer dominate the machine room, their vastly increased power has allowed for extensive telecommunications networks. Through networks, input and output functions have migrated to remote customers. This growing community of telecommunications users has built larger and larger central data bases.

Keeping Control

A truism within computing is that it is easiest to serve, control and account for a homogeneous group of users. It is quite simple, for example, to configure a computer to handle a uniform group of interactive IMS users. It becomes much more difficult, and some would say impossible, to mix IMS users with an active group of TSO users. When significantly different demands are placed on a CPU, response time deteriorates for everybody.

Users running small batch and interactive processing jobs have never fit well into large data centers. The people behind these programs tend to be independent, outspoken and demanding, yet their use of mainframes is so light that cost recovery per job tends to be insignificant. The overhead necessary to schedule, queue and account for these programs often requires more CPU time than the actual job execution.

Small jobs are really a nuisance to the modern central computer operation. They create prime-shift bottlenecks and ultimately encourage desperate attempts to upgrade the configuration.

The personal computer is where small jobs belong. The personal computer has no staff of operators, no systems programmers, no raised floor or motor generators or special air conditioning. If a job can fit on a personal computer, there is simply no cheaper way of getting that job done.

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Data centers must, therefore, encourage migration of small computer jobs to personal computers. Relieved of the burden created by small jobs, data centers can concentrate on meeting the needs of large customers.

Homogeneous Population

Computer resource chargeback can be approached quite differently with a more homogeneous user population.

Let us assume, for example, that a typical U.S. manufacturer has a large centralized computer facility. If small jobs were eliminated, the machine room might have a work load something like the following:

- Accounting and financially oriented systems, such as payroll, general ledger, stockholder records and cash-flow analysis.
- Manufacturing control systems, such as parts tracking, inventory control and scheduling.
- Engineering and product design, using development systems like computer-aided design and manufacturing and other graphics aids.
- Administrative systems, such as personnel records and plant layout.

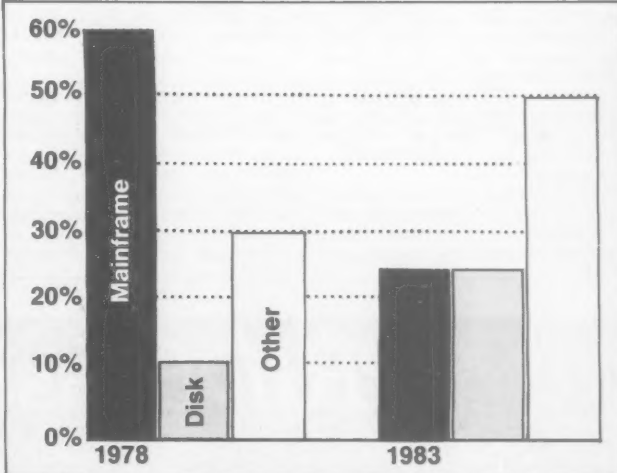
The attribute common to all of these users is their long-term commitment to data processing. As big users, they require extensive resources and large data bases. They are sophisticated and often capable of controlling complex communications networks. And, since they have been involved in data processing for a long time, they understand its capabilities as well as its shortfalls.

In general, these users demand long-term data storage, access (usually on-line) to that data and periodic processing and manipulation of stored data. With these customers, the data processing center actually becomes a data storage center. This is why the typical computer operation is expanding disk capacity by 40% to 60% each year.

At the same time, the actual processing of data is becoming a trivialized activity. In the next few years, mainframes will reach computing speeds of 100 Mips. And if cost trends continue, these incredibly fast processors will be cheaper than current 10- to 30-Mips systems.

Information-Oriented Chargeback

With help from small computers, data centers are emerging as providers



System Cost Components

ers of information resources. These resources can be represented in two different ways.

Networks. Access to data is handled by communications networks whose principal components are data lines, transmission control units and

people. Control unit hardware must be purchased and dedicated to the network.

For all but the most insignificant tasks, transmission lines must also be dedicated permanently to each network. And most networks require a

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small team of dedicated people.

Network use should therefore not be considered discretionary. Even when the network is used sporadically, it must always be there. When the accounts receivable department must check the payment history of a potential customer, it expects instantaneous access to a file.

The services of a network must exist continuously. Charging for each individual's use of a resource like a network is therefore meaningless.

Users should simply be charged for the network's availability. This can be accomplished through subscription accounting.

All network-associated costs are totaled and then divided by the number of terminals using the network. The resulting value, called a subscription fee, is then charged against each terminal connection on a periodic basis, such as each month.

Mainframes. Not all computer users are equal. Some obviously derive

more value from data processing than others. The payroll must get out each Friday, and intricate pricing estimates on a major proposal must be finished on time. On the other hand, whether or not a small time-sharing user gets his personal telephone list updated immediately is of much less significance.

The concept of information importance can be expanded into a priority scheme.

Information stored in the data

center may be broken down into at least three tiers:

- Survival information that is required for the long-term operation of the company.

- Project data that is important during a specific period of time, after which it has little value.

- Transient data that is used for immediate results and then discarded.

Most transient data is in the process of migrating to personal computers, and this trend, as pointed out before, is desirable.

Those users who generate survival-class data should pay for most of the data center. They benefit greatly from large-scale computers. In fact, this group of users justified those systems in the first place.

Project data is less important and should therefore be assessed at a lower cost.

An equitable split might be to charge survival data at a rate twice that for project data.

For chargeback, a simple usage measurement must be determined. A practical solution is to charge for data storage. The assumption is that large data bases consume equivalently large amounts of other computer resources. Even if they do not, their data storage is consuming the most important resource in the machine room.

On a monthly basis, each user's data requirements could be segregated into 100M-byte increments, against which a tiered set of rates could be applied to determine cost. The relatively large incremental charge of 100 million bytes would tend to discourage small users.

Equitable, Simple

Charging for network access based on uniform subscription fees and for mainframe processing based on a tiered value for information storage meets the two principal

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accounting goals of equitability and simplicity.

Subscription chargeback for communications has been used successfully for many years in systems such as airline ticketing, hotel reserva-

tions and florist delivery. The creators of these commercial systems recognized early that network costs were primarily fixed, so complex utilization schemes defeated the important goal of provid-

ing access to valuable information.

However, most companies have not simplified the way in which they measure computer usage. Most corporate processing centers use com-

plex algorithms and timing statistics to charge for resource consumption.

Data centers are not using simplified accounting approaches because the user population still seems so

large and diverse. But the typical computer operation is about to see its large user population dwindle to perhaps 10 or 20 big customers. Under these conditions, older, more precise accounting such as measurement of CPU time and I/O activity simply wastes computer resources and money.

Support From the Top

Moving from the apparent precision of CPU accounting to a more general valuation can be upsetting. Many large users will undoubtedly end up paying more for the processing they need. It is therefore unlikely that data center management could unilaterally change to a new accounting methodology.

Getting top management involved has become a time-honored remedy, more recommended than practiced. But in the case of changing the computer accounting system, it makes a great deal of sense.

Properly presented, this concept can expose management to how important data processing is to company survival. Managers will quickly realize that relatively few very large computerized systems are justifying the investment in centralized processing. The idea of shifting costs to those large users follows logically and intuitively.

Top management will conclude that there is no choice but to adopt new, simplified computer accounting that charges for the value of information rather than for use of CPU cycles.

The goal is to keep large information processors on central mainframes while letting small jobs migrate to personal computers. With a more homogeneous user base, central computer operations can scale back their machines and, ultimately, reduce the cost of data processing for everybody.

About the Author

Kenneth Sullivan is manager of accounting for McDonnell Douglas Automation Co. in Long Beach, Calif. He has been involved with computer accounting for more than 15 years. Sullivan teaches accounting and computer sciences at Golden West College in Huntington Beach, Calif., and his first book, *Practical Computer Cost Accounting*, was published in January by Van Nostrand Reinhold Co., Inc.

data processing

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BYTES and BOLTS:

Can Manufacturing Midlands Lure High Tech?

By Dale F. Farmer

A recent study commissioned by the Joint Economic Council of Congress stated that the Midwest offers "the best overall investment climate for the high-technology companies. Its labor markets compare favorably with the high-cost markets in New England and the Far West. Also, its academic institutions rank above academic institutions in the Southeast, Southwest and Mountain and Plains states . . . This region was found to lead the other regions in the percentage increase in new plant additions (expected) over the next five years."

The commission went on to report, "Apparently, the high cost and availability of labor, high taxes, congestion and inadequate room for expansion in the New England and Far West regions are beginning to outweigh their advantages, resulting in the geographical dispersion of

new plants and permanent offices."

Attracting industry, especially high technology, has become somewhat of an obsession in the Midwest. City vs. city, state vs. state — each tries to outdo the other in attracting businesses.

High-technology companies that have already become firmly established in the region include Magnavox, Delco Electronics, General Electric Co., Bowmar Instrument Corp., Wavetek Indiana and IT&T. Specialties range from computer hardware to software, biomedical equipment to robotics, silicon to superconductors.

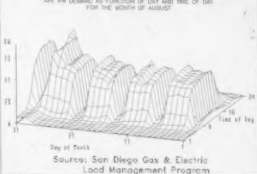
Most of the potential for high tech in the Midwest lies in areas of applied technology, although some work in design and development of silicon chip circuitry is taking place there. The hope is that applied high tech will bring upgrades in old

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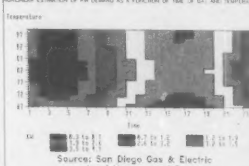


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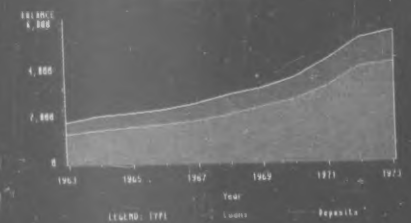
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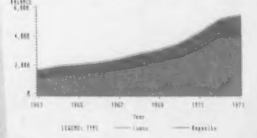


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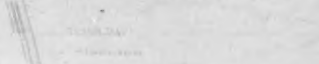
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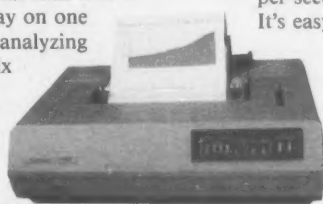
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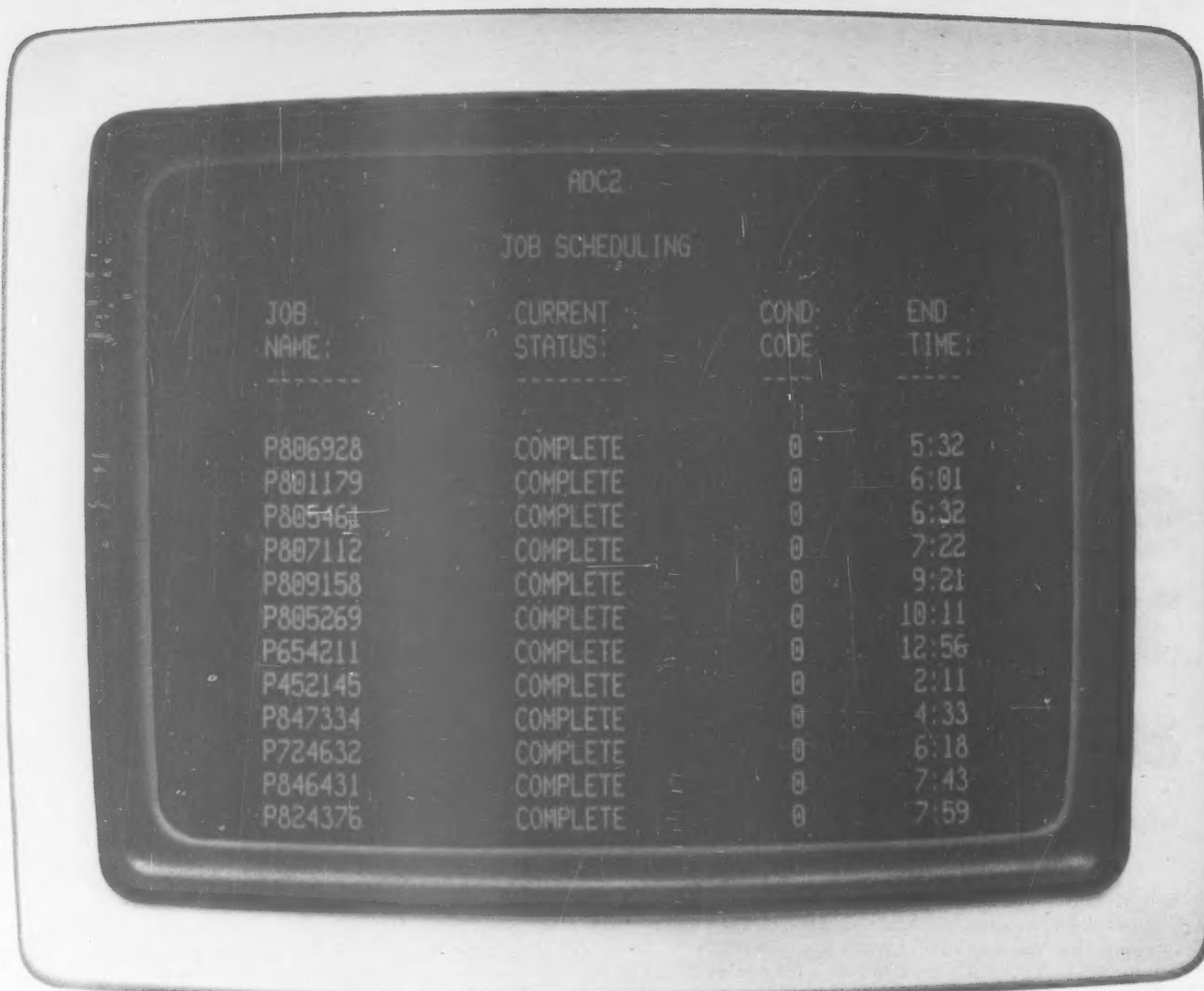
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Selling Points

Despite the concentration of industries in the Sunbelt states, climate is not one of the major factors that influence a company to locate in a particular region, according to results of a JEC survey of business people in the high-technology industries (see box).

One primary attraction to these firms is proximity to major educational centers. The Midwest is home to Purdue and Illinois Universities, considered among the top 10 electrical engineering schools in the U.S.

Cities throughout the Midwest are offering a variety of incentives to new businesses. Some city departments offer direct aid to companies. Kathy Moses, assistant director of the Fort Wayne, Ind., Department of Economic Development, reports that her department acts as a "business ombudsman" whenever a local company is having problems with other departments within city government.

"We may meet with the prospective business to determine what its needs are and put together land, which would mean we would extend sewer and water lines to the company. We could build them a building or provide low-interest loans. We might write for a federal grant to get more money to help the company," she notes.

Other enticements to new industries include tax abatements and accelerated depreciation.

Fort Wayne's programs are representative of those springing up in a number of Midwestern cities. Among them are job training projects partially funded by the cities. Fort Wayne Mayor Winfield C. Moses Jr. says his city has launched one program under which it will pay for half of job training expenses for up to 44 weeks.

As another inducement to business, the city has set up a Loan to Lender program. As Moses explained, many communities offer revenue bond programs to lure new industry. The programs allow new companies to finance new construc-

Rank	Attribute	Percent Significant Or Very Significant*
1	Labor skills/availability	89.3
2	Labor costs	72.2
3	Tax climate within the region	67.2
4	Academic institutions	58.7
5	Cost of living	58.5
6	Transportation	58.4
7	Access to markets	58.1
8	Regional regulatory practices	49.0
9	Energy costs/availability	41.4
10	Cultural amenities	36.8
11	Climate	35.8
12	Access to raw materials	27.6

*Respondents were asked to rate each attribute as "very significant, significant, somewhat significant or no significance" with respect to their location choices. The percents of very significant and significant responses were added together to obtain an index of overall importance.

Source: Joint Economic Council

Factors in the Regional Location Choices of High-Technology Companies

tion with the proceeds of tax-free bonds, usually backed by a development commission or the state.

In Fort Wayne, Moses explained, new companies seeking to build or expand are reviewed by the city's economic development commission, which determines if the company is solvent enough to be eligible for a tax-free bond. But instead of obtaining bonds for eventual sale, qualifying companies get a letter of credit backed by the city. The letter is then

immediately payable by local banks.

Because of the growth potential in high-technology industries, many cities are forming "high-tech centers" to provide technical training for local workers, help attract new business to the area and create industrial parks suited specifically to high-tech businesses. Some of the centers are involved in research and development activities.

Fort Wayne has created a Summit Technology and Resource Transfer

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IN DEPTH

(Start) center. Start will develop a technology base to help existing industries in Fort Wayne, Allen County and Northeast Indiana to improve productivity "through the use of technology transfer," according to Warren Worthley, the project's executive director and an associate dean of Indiana University/Purdue University. "With that capacity in place, Fort Wayne should be more attractive to other high-tech companies," he says.

'By moving slowly, planning conservatively and addressing the right industries in applied technology, the Midwest hopes to produce strong and stable economic growth.'

There are some basic differences between Start and other high-tech centers under development in the

Midwest. Although Start will help develop and coordinate worker training in high-tech fields, it will

not conduct the training itself. Most high-tech centers are moving into research and development, but Start will devote its energies to applying technology, already developed elsewhere, to specific needs.

The Midwest as a whole has experienced severe cutbacks in labor, most notably in the transportation industry. But at the same time, high-technology employment (which is largely nonunion) has been on the rise.

The Midwest will probably not become a leading innovator of new technologies. Nor do officials expect or want the unrestrained growth characterized by the Silicon Valley phenomenon. But by moving slowly, planning conservatively and addressing the right industries in applied technology, they hope to produce strong and stable economic growth.

In the following interview, Indiana Lt. Gov. John Mutz talks about the prospects for high-tech industries in the Midwest and what his state in particular is doing to attract those industries.

How do you go about attracting high-tech corporations or, for that matter, any corporation?

Well of course, in the case of many corporations, the issue of markets is the No. 1 concern. And then after that, they start to look at such things as the availability of natural resources, a trained labor supply and availability of transportation. Those all are basic factors in location decisions.

One of the interesting things that differentiates a manufacturing opportunity from what we call a "high-tech opportunity" essentially is that location — that is, geographic location — is not nearly as important. The things that become important in terms of a high-tech industry are 1) the quality of education, particularly college and graduate education in the region; 2) proximity to other individuals who have the same kind of goals and the same kind of educational attainment; 3) a favorable tax climate.

People who run high-tech businesses are generally pretty self-sufficient entrepreneurs — people who believe very strongly in the idea of taking a risk and then having the opportunity to either fail or succeed. And so, even in those states where previously there were high tax rates for individual taxpayers, those that have attracted some of this high-tech business have seen a strong movement to reduce the individual tax rate.

If I were a computer corporation executive asking you about Indiana, what would you tell me are the advantages of locating in your state as opposed to, let's say, the West Coast?



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IN DEPTH

Well of course, the first thing I would talk about is access to what is really the largest marketplace in the United States. Indiana is within one day's drive of roughly 55% of the total population of the U.S. So if you want to have total market penetration, there are probably some advantages from that standpoint.

In addition, of course I'd talk about the quality of the engineering school at Purdue University, one of the country's major engineering schools. And then a very small, but quality, engineering school at Rose-Hulman near Terre Haute.

I guess I'd also talk about the fact that within this market area, we have a strong electronic base already, and it revolves around major companies like Magnavox and ITT in Fort Wayne, Memcor in Huntington, Delco Radio in Kokomo, the Naval Avionics Factory (the major research arm of the U.S. Navy) in Indianapolis, and the Western Electric facility, which is the major producer of telecommunications equipment for the entire Bell System.

So the current high-tech base in the Midwest is rather large?

Well, I think you have to differentiate a little bit. Many of the so-called high-tech "glamour" industries are not located in the Midwest. They are located on the coasts, and have been located in proximity to major educational institutions — Stanford in California, MIT and Harvard in the East. We have what I call the "second line" in terms of high technology. We deal more in the application of high technology than in the fundamental development of that technology.

However, I see an opportunity in certain areas, I call them "niches," where the Middle West can succeed. I think a good example of that is cable television technology.

Do you think the Midwest would have a good base for computer applications such as software development, robotics, artificial intelligence and the like?

I can't speak for the artificial intelligence question, but I can speak, I think, for the eventual computerization of the entire manufacturing process from the de-

sign phase, computer-aided design, clear through to the use of robots to produce the first prototype of a product, the testing of that product and then finally the automated manufacturing of the

product itself.

We are in an ideal location for that kind of application of high technology. And the reason we are, of course, is that the manufacturing locations are already here and

these products are being manufactured. We have two choices, it seems to me: We're either going to manufacture them in other parts of the world where labor costs are substantially less or we're

going to manufacture them here with highly automated techniques.

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IN DEPTH

pan and Ireland. Do you see the Midwest as a possible competitor for that same business?

Well we are, in part, a competitor. But it depends on which kind of competition you're talking about. If you are talking about labor competition, I don't think you could hold us out as a low labor cost area. We are lower labor cost now than many of the sophisticated areas you normally think about in high technology, like

Massachusetts or California. But we certainly are not low labor cost when you compare us with Taiwan or Korea or Hong Kong or Singapore. There's an awful lot of out-sourcing going on in those regions.

Even Japan, which used to be a country with advantages from the labor cost standpoint, is now engaged in out-sourcing certain products where labor is a major component. For example, television picture tube manufacturing — we normally think

of Japan as being our major competition. The fact is, we are competing against Japanese companies, but they're making those tubes in the lower labor cost regions of that part of the world, not in Japan.

Not too long ago, I was involved in a competitive situation with the television picture tube business, and at first glance, everybody said, "Well, it's Japan that's killing us." Well, in reality, it's low labor costs in Korea and Taiwan that are killing us there,

not the issue of Japan itself, because their labor costs have gradually risen and are approaching ours.

In other words, we can't handle the labor costs, but we could handle more of the development of applications.

That's exactly right. And, you see, one thing the United States still leads the world in is basic research, and that advantage is one that we have to be sure we maintain as far as the future is concerned.

Does Indiana give tax credits for research and development?

Yes. We're one of four states in the union that have a direct tax credit that piggybacks on the federal tax credit for "R&E" activities (the federal act describes it as research and experimentation rather than research and development). And there is a 25% credit against a base year. In other words, if you increase your research activity over the base year, then you get a 25% credit on the amount of the increase. In Indiana, we have our own tax credit, which started at 2% and then goes in '84 and '85 to 5%. So if you do research and experimentation in Indiana, you can have up to a 30% tax credit.

With all of these points in mind, and considering the report that came out earlier this year from the Joint Economic Council, what do you feel is the high-tech growth potential here?

Well, high-tech growth potential in Indiana has to be targeted. That is, we have to pick those areas where we can be expert. My point is that we can't be a duplicate of the Silicon Valley. We can't attempt to, for example, be expert in those areas that have already been pretty well pursued. So our goal is to carve out some niches that apply particularly to Indiana, to spend our resources and to target our monies toward those kinds of things, both in the educational institutions and in the actual research activity.

We have a consortium at Purdue University, for example, that's involved in a computer-aided design and manufacturing experiment in which five major U.S. corporations have pooled their resources, and the university and the state have added

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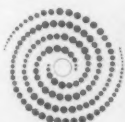
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IN DEPTH

their resources to the program, to actually create the technology for the so-called "factory of the future."

Along the same line, the diesel engine industry is already a successful industry

in Indiana; we would work in what will be the cutting-edge technology in that area. Another area is advanced materials research as it applies to basic metals manufacture. We are a major alu-

minum producer, and of course we're the largest state in the union in terms of steel production at the present time. My contention is that those companies have a need to be deeply involved in

high technology in terms of the future of the materials selection. So our goal there is to generate some research activity in an industry that is very shy of research dollars at the present time.

Do you think that the image that is projected of the Midwest, that of a basically union/smokestack industry center, is possibly deterring businesses from coming to the Midwest?

That is, without any question, our No. 1 hurdle to overcome — the image of high wages, high union influence and so on. Now, the fact is that in a few industries, there is a strong union influence. But in about 80% of our industries, there is virtually no union or high wage influence. That is a fact that is not easily perceived by a lot of business people and investors who look at us. But we are gradually getting the story to them.

Would you like to make any concluding comments to executives considering a move to Indiana or the Midwest?

Well, I suppose the biggest turnaround in terms of this state has been our ability to put together an organized, comprehensive economic development program — one that emphasizes free enterprise. Above all else, what we are trying to do here is create an atmosphere that invites risk taking. We are not trying to buy the business from the Sunbelt or to buy it by front-end incentives. We have those things in order to be competitive, to be sure.

But ultimately, our goal is to encourage the entrepreneurial spirit, because that spirit is what finally makes these things happen. The more people we can get in Indiana who have that spirit, the more it will attract.

And, we hope to enrich the quality of our educational institutions. We have some additional commitments to make in terms of expenditures. But we've got a darn good system, one that educates a lot of people for other parts of the United States.

We're one of the major producers of engineers in the country, yet two-thirds of all the people who graduate from engineering schools end up working outside the Midwest. That situation is changing. My major goal now is to keep more of that talent in the state.

About the Author

Dale F. Farmer is the EDP auditor at Peoples Trust Bank in Fort Wayne, Ind. Also a freelance writer, he is working on a book about cyberphobia.



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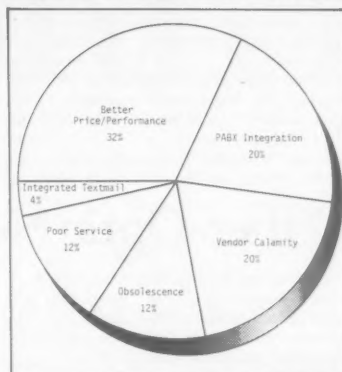
To Their Stand-Alone Systems Study: 32% Voice Mail Users Lack Loyalty

WELLESLEY, Mass. — Almost one third of present voice mail users showed little brand loyalty to their stand-alone systems in a market study released by Venture Development Corp. (VDC), located here. These users would buy a new system for a better price/performance ratio or for more integration capabilities with a private branch exchange (PBX).

The study titled, *The Voice Mail Industry: A Strategic Analysis*, said that 32% of the respondents would strongly consider switching vendors when making future voice mail purchases.

Voice mail systems were defined for this study as the "computer-controlled deposit, storage and delivery of voice messages."

Some 20% of the users would switch from their present vendors who do not plan to offer full integration with a PBX. This integration takes advantage of the PBX's control signals to provide automatic telephone answering for the busy/no answer condition and message waiting indication that eliminates the need to check constantly the voice mailbox.



Courtesy Venture Development Corp.
Reasons Given to Switch Voice Mail Suppliers (Percent of User Mentions)

"Voice mail growth really relies on the development of the PBX market," said Marc H. Rudov, manager of the communications division at VDC who conducted the study.

Oceanographic Research Group Installs Fiber-Optic Local Net

By Katherine Hafner
CW Staff

FORT PIERCE, Fla. — The Harbor Branch Foundation, a nonprofit oceanographic research institution based here, recently installed a fiber-optic local-area network for a complex of buildings spread out over a mile of Florida coast.

The foundation employs some 150 people who conduct research on topics ranging from aquaculture to cell plankton.

The distance between buildings makes interactive communications difficult at Harbor Branch. And the desire to switch

from a batch shop to an interactive shop spurred Harbor Branch scientists to consider installing a local-area network.

One of the first commercial users of a [Xerox Corp.] Ethernet-compatible fiber-optic network, the Harbor Branch Foundation chose fiber-optic over coaxial cable because Florida is prone to frequent lightning storms, according to Katie Nall, manager of computer services for the foundation.

"With cables buried underground, whenever lightning struck, we'd have to (Continued on Page 72)

Provides Single-Key Access Integrated Telephone/Micro Out

STAMFORD, Conn. — Digital Transactions, Inc. has introduced Telterminal, which is said to be an integrated telephone/personal computer designed for white-collar workers.

A major feature of Telterminal is the Management Assistance Package that reportedly gives the user single-key access to an array of communications and information capabilities. A speed call directory for as many as 250 numbers allows users to send and receive attended and unattended messages.

In addition to several private-branch exchange features, Telterminal's personal processing capabilities include an ad-

vanced programmable financial and/or scientific calculator, calendar and "pink slip" message center.

The Telterminal looks like a business telephone. Positioned between the receiver and the Touch-Tone dialing system is the typing keyboard and a row of function or command keys. Text is displayed on an LCD window.

Telterminal measures 16-in. wide, 9-in. deep and 2½-in. high and costs \$2,495 each from Digital Transactions, located at 1033 Washington Blvd., Stamford, Conn. 06901.

Products Augment Sperry Line

BLUE BELL, Pa. — Sperry Corp. has introduced a line of new products designed to augment the company's UTS 4000 line of communications terminals.

The products include the UTS 30, a new display station; DDP 4000, a system control software for distributed processing for terminals and controllers, an 8409 disk subsystem based on Winchester technology; the 431 model character printer; the 8439 double-sided diskette subsystem for the UTS 40 single station and UTS 40 workstation; and a new F4042-00 diskette

"The year 1984 will be the demarcation point for the industry. That's the year it will take off," he said.

But very large Fortune 500 companies with more than 15,000 telephones will not be as likely to buy a new PBX just to acquire voice mail and telephone answering capabilities, the study also showed. "Therefore, the stand-alone suppliers will have to capitalize on a vanishing opportunity to satisfy the small, but important market segment," the study showed.

The stand-alone suppliers can do this by providing the same integrated features to local telephone company Centrex users through a combination of PBX/voice mail systems.

Another voice mail alternative is to use a service bureau now started by existing telecommunications firms. For smaller users, this alternative offers the advantages of voice mail with no hardware purchases, the study pointed out.

"The merging of information processing and telecommunications, as well as the drive for increased human productivity, are the major forces driving this business," the study revealed.

The study is available for \$3,290 from Venture Development Corp., One Washington St., Wellesley, Mass. 02181.

Interfaces Handle Transfer of Data For DEC Processors

MAYNARD, Mass. — Direct memory access alternate-buffered, general-purpose interfaces said to maintain continuous-flow data transfer to and from a computer's main memory have been introduced by Digital Equipment Corp.'s Computer Special Systems Group.

Designated the DRE11 and DRU11, the interfaces are available for the VAX-11 and Unibus PDP-11 computers, respectively. Both models reportedly transfer streams of 16-bit parallel data at peak rates to 600,000 (DRE11) and 500,000 (DRU11) word/sec and connect to the system's Unibuses.

The interfaces are supported under the RSX-11M, RSX-11M-Plus and VAX/VMS operating systems, using available device-handler software. The interfaces connect directly to external devices or another central processor's bus at distances of up to 48 ft., the vendor said.

The DRE11 and DRU11 are priced at \$2,495 each; the device-handler for the VAX/VMS operating system is \$1,500, and the driver for the RSX-11M and RSX-11M-Plus costs \$1,200. DEC is located at 146 Main St., Maynard, Mass. 01754.

COMMUNICATIONS



Courtesy Digital Transactions, Inc.
Telterminal

interface to allow connection of the 8439 model diskette to the UTS 40.

The UTS 30 display station is available in two versions, as an editing terminal or a user-programmable terminal/desktop computer. The display station reportedly supports as many as four printers, a 5¼-in. diskette subsystem with up to 2.6M bytes of storage and a magnetic strip reader.

The first version of the DDP 4000 control software for distributed processing for terminals and controllers is used as the op-

(Continued on Page 74)

Boosts Ambassador's Capabilities Firm Introduces Graphics Master

ANN ARBOR, Mich. — Ann Arbor Terminals, Inc. has introduced its Graphics Master, which reportedly adds full vector capability to the company's Ambassador display terminal.

The Graphics Master reportedly accepts Tektronix, Inc. 4000 series-compatible graphics input and presents images in a 768- horizontal by 600-pixel vertical format. It is packaged as a free-standing unit upon which the Ambassador Video Display Unit rests, according to a spokesman for the vendor.

The Graphics Master is reportedly compatible with such graphics software packages as Integrated Software Systems Co.'s Disspla and TellaGraph and SAS Institute, Inc.'s SAS/Graph, the spokesman said.

Other features of the Graphics Master include

multiple line types, adjustable character sizes and angles, hard-copy output and selective erase.

The Graphics Master is priced at \$1,500. More information is available from Ann Arbor Terminals, which is located at 6175 Jackson Road, Ann Arbor, Mich. 48103.

Institute Gets Fiber-Optic Net

(Continued from Page 71)
replace it," Nall said. "So we decided to go with fiber-optic."

Before Harbor Branch began considering a local-area network, its communications system was limited to a link between a Digital Equipment Corp. PDP-11 minicomputer and six terminals, five of them hard-wired to the PDP-11 and the sixth attached to a line driver from an adjacent building.

"With our old system, scientists had to leave their offices, travel to our building and try to vie for time on the terminals to get their work done," Nall said. "Lots of people were coming in after hours just to get their work done."

In early 1982, the foundation embarked upon a search for a local-area network. One of the criteria for selection was that scientists be able to use terminals in their offices, which are spread out in five different buildings over 400 acres, Nall said.

Stand-alone microcomputers with no communications capabilities were quickly ruled out, Nall said. "We dismissed the micro-only idea because users wanted to share data."

After examining 11 different computers, the foundation purchased a Prime Computer, Inc. Series 50 Model 550-II superminicomputer, along with 35 Visual Technology, Inc. Model 50 intelligent terminals.

The only remaining problem lay in linking the system together. "We investigated the telephone companies and multiplexers," Nall said. "We even considered just putting a number of line drivers in. We dismissed all three options because we felt they didn't allow us enough flexibility, and the cost was prohibitive."

The final choice was a fiber-optic local-area network. Through Ungermann-Bass, a vendor of local-area networks, the foundation purchased network interface units and software. The cable itself was supplied by Siecior Corp.

The fiber-optic network consists of fiber-optic cables strung from telephone poles linking five buildings over a U-shaped area of one mile, an optical star coupler and Ethernet-compatible optical

CRT Terminal Offered With Over 28K Bytes Memory

ANN ARBOR, Mich. — Ann Arbor Terminals, Inc. has announced a CRT terminal aimed at professionals who want an Ansi-standard terminal with more than 28K bytes of memory.

The Guru reportedly can be scrolled both horizontally and vertically. It provides

user-selectable memory formats of up to 250 lines by 255 columns, the vendor claimed.

The Guru is compatible with the firm's Ambassador model. Its keyboard is standard with 38 keys programmable on 60 levels with any Ascii string, including locally, send-only and repeat control, according to a spokesman for the vendor.

The unit costs \$2,395 with 30-day delivery from Ann Arbor Terminals, which is located at 6175 Jackson Road, Ann Arbor, Mich. 48103.

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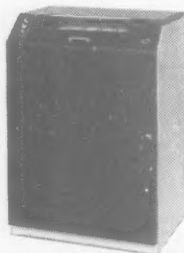
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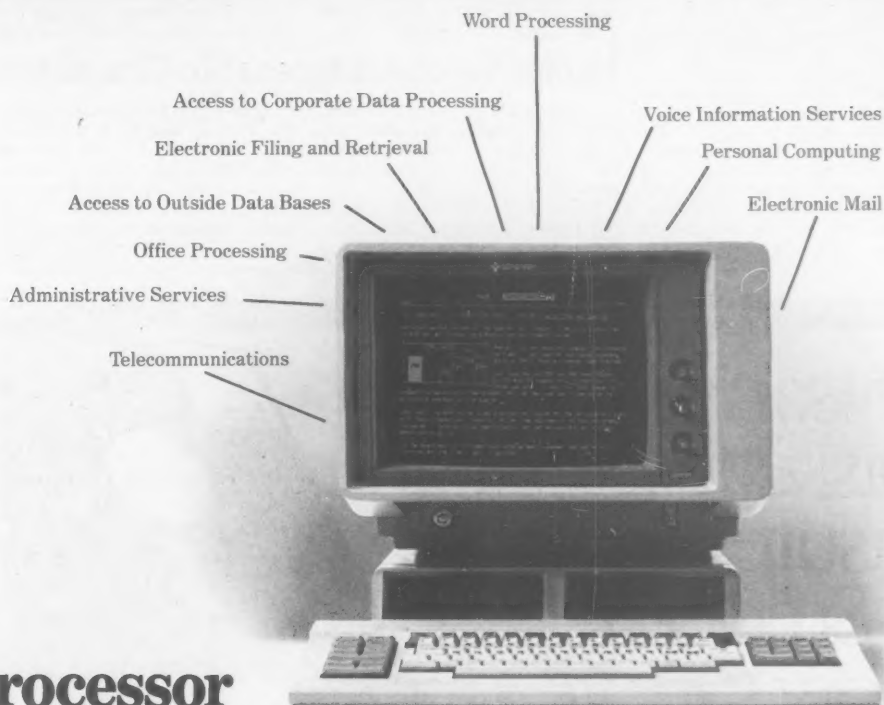
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Designed for RS-232

Switch Offers Null Modem

PORTLAND, Ore. — U.S. Software has announced the Patchman model MS40, an ABC switch which offers a null modem option. The switch was designed for use with RS-232 devices.

Patchman allows a common device to be shared by up to three other devices on a single RS-232 line. The unit can switch the seven asynchronous RS-232 lines to transmit or receive data, request to send, clear to send, data set ready, carrier detect and data terminal ready functions.

The null modem switch can be used to connect devices of the same type. The null modem switch interchanges: transmit data with receive data; request to send with clear to

send and data terminal ready with data set ready.

The Patchman model MS40 switches a common female connector to one of three other female connectors. The unit costs \$19.95, U.S. Software said from 5470 N.W. Innisbrook Place, Portland, Ore. 97229.

Esprit Gets Addressable Graphics

ROCKVILLE, Md. — International Marketing Systems, Inc. (IMS) has announced dot-addressable graphics for Esprit Systems, Inc.'s Esprit III terminal.

The E-III Graphics Controller is said to bring to the Esprit III full Texttronix, Inc. 4010 capabilities and is

CUPERTINO, Calif. — Bridge Communications, Inc. has introduced a network gateway device that reportedly links as many as eight remote Xerox Corp. Ethernet networks using common point-to-point connection media.

As a full implementation of Xerox Corp.'s Xerox Network System, the GS/3 Internetwork Router is a com-

munications processing system that supports from two to eight communication lines, with a maximum aggregate data rate of 304K bit/sec, according to a vendor spokesman.

The GS/3 reportedly uses any point-to-point connection method accessible via an RS-232/423 or 422 synchronous communications port, including leased lines, fiber-optic links, point-to-point broadband modems, microwave links and switched lines.

Available in August 1983, the GS/3 is priced at \$9,900, according to the vendor.

Bridge Communications is located at 10440 Bubb Road, Cupertino, Calif. 95014.

Amdek Cuts Monitor's Price

ELK GROVE VILLAGE, Ill. — Amdek Corp. has reported a reduction in the price of its 13-in., high-resolution portable Color II monitor for use with the IBM Personal Computer and Apple Computers, Inc. Apple II and III personal computers from \$649 to \$529.

The monitor reportedly provides high-resolution color graphics display, with 80 by 24 character display capability. The monitor provides 16-color intensity modulation for IBM personal computers and may be used with an optional digital video multiplexer for Apple II compatibility.

Amdek is located at 2201 Lively Blvd., Elk Grove Village, Ill. 60007.

Sperry Series Augments UTS 4000 Line

(Continued from Page 71)

erating system for the UTS program-mable terminal, while the other is designed for use with the UTS 4020/4040 cluster controllers.

Operating under control of DDP 4000, Sperry's UTS 4000 family of terminals is reportedly compatible with distributed communications architecture at the communications level. DDP 4000 also has a terminal command and response language, which is used for controlling distributed data processing functions, host connection and remote batch processing, a vendor spokesman said.

The 8409 disk subsystem is reportedly capable of storing up to 47.5M bytes of information and can be ordered with one or two disk drive assemblies in three capacities: 23.7M byte, 14.25M byte and 4.75M byte.

The 431 letter-quality printer features proportional spacing and page formatting.

The 8439 double-sided diskette subsystem provides random-access mass storage using 5¼-in. diskettes and has a storage capacity of up to 655K bytes of formatted data per diskette.

The UTS 30 display station is priced at \$2,277. The printer costs \$2,641 and the 8439 diskette subsystem costs \$1,245. The 8409 disk subsystem starts at \$9,650. Sperry Corp. can be reached through Box 500, Blue Bell, Pa. 19424.

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DY¹⁰ eliminates abrasion and compliance problems. Here's how. Abrasive surfaces are possible even with a lubricated surface. Often lubricants can be too thin, creating an abrasive surface that can result in premature head wear and shortened diskette

life. Still others may be too viscous, interfering with head-to-surface compliance and resulting in "bouncing" (resonating). This bouncing causes signal loss between the read/write heads and the diskette, resulting in soft errors. DY¹⁰ eliminates these abrasion and compliance problems with the most uniform, reliable lubricant in the industry.

Other Benefits

Dysan goes a bit further in the testing process, certifying that each diskette is 100% error-free both on and between the tracks; and more tested surface means greater data integrity and unsurpassed performance. Advanced burnishing techniques provide optimum head-to-disc interface by flattening even the most microscopic surface peaks. Dysan's exclusive "hands-off" auto-load certification system allows Dysan to test each and every diskette and eliminates any possibility of handling errors.

The true cost of a diskette equals the purchase price plus the time you spend to fully load the diskette. Reliability translates into cost savings.



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Running head-to-head with IBM, the Memorex 3864 is the clear winner, with an access time of 0.4 msec., 600% faster than the 2305 and 200% faster than the 3880-11.

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more auxiliary mainframe memory. Up to 144 megabytes, which is more than 18 times the capacity of the 3880-11.

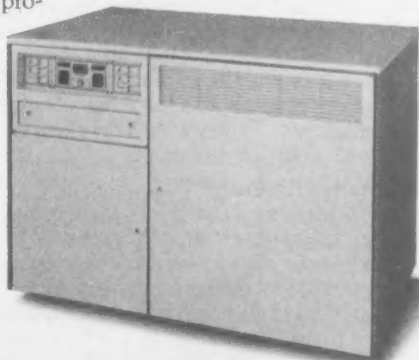
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Photographed at IBM Data Center, Chicago, IL

Including 400 Pieces of Equipment Insurance Firm Moves Computer Center

By Patricia Keefe
CW Staff

PORTLAND, Maine — What do you do when faced with the prospect of moving millions of dollars worth of computer equipment? If you are the Union Mutual Life Insurance Co. here you start from scratch — and in more ways than one.

With the walls of its computer center closing in, the insurance company was forced to choreograph its own moving plan and construct a new building to boot.

The company's Computer Operations Department processes 170,000 CICS transactions and 2,500 batch programs per day, in addition to supporting 1,500 remote terminals. The large-scale computer center included approximately 400 pieces of equipment, a 25,000-reel tape library and several thousand feet of wiring, according to Ronald M. Kovich, manager of computer operations.

Since 1979, the company's annual growth of between 15% and 20% has placed enormous demands on the five CPUs installed at the computer center. Last year it became obvious that the lack of space was becoming a problem. While continued growth would mean purchasing a new system to handle the enlarged data base and increased day-to-day on-line system operations, there was no more room to house a new computer. Union Mutual officials realized something had to be done.

The company had two options: enlarge the existing center, built primarily of glass, or build a new one. Due in part to the difficulty of integrating a state-of-the-art fire detection and suppression system and security system into the existing building, renovation was ruled out as too expensive. Instead, Union Mutual opted to build a new structure that would have the state-of-the-art systems as its central focus.

A "Move Committee" was formed, com-



Workmen move part of Union Mutual Life Insurance Co.'s 400 pieces of equipment, including a 25,000-reel tape library and several thousand feet of wiring, into the new data center.

prised of four visible "decision makers," including Kovich. The new facility was designed to be nearly three times the size of its predecessor. An additional 12,000 square feet would bring its size to 20,000 square feet, with 3,000 square feet reserved for a tape library and 1,500 reserved for a telecommunications network control center.

The date of the move had to coincide with the completion of the new center, set for Aug. 1, 1982, and delivery of the new computer system, an IBM 3081. Realizing that a weekend move would involve the least amount of downtime, the committee decided upon the long Labor Day weekend to allow themselves "a window of five days to complete the move (deinstall and

(Continued on Page EE)



NAS Announces Price Reductions For AS Family

MOUNTAIN VIEW, Calif. — National Advanced Systems, Inc. (NAS) has announced it will be reducing prices for computer memory and overall systems maintenance on certain models of its Advanced Systems (AS) in response to IBM's recent reductions in 3080 memory and maintenance prices.

Effective immediately, each 8M-byte increment of memory on the NAS AS/9000 family of large-scale processors is reduced in price from \$200,000 to \$150,000. Each 4M-byte increment of memory on its most recently announced processor family, the AS/8000 series, is now commensurately priced at \$75,000.

The prices apply to new systems and to field upgrades of existing and installed systems.

Maintenance prices on certain models of the AS/8000 series and the AS/9000 series processors have also been adjusted slightly to reflect IBM reductions. Because of the dozens of different configurations available within these system families, questions regarding specific configurations will be handled by individual NAS sales offices.

NAS is located at 800 E. Middlefield Road, Mountain View, Calif. 94042.

Wang 64K-Bit RAM Module To Compete With 256K-Bit Chip

LOWELL, Mass. — Wang Laboratories, Inc. has introduced a 64K-bit dynamic random-access memory (RAM) module that the company claims will provide a low-cost alternative to 256K-bit RAM technology.

The Single In-Line Memory Module (Simm) reportedly quadruples the density of the memory that can be placed in a printed-circuit board area, but is priced 50% lower than the 256K-bit dynamic RAM chip recently introduced by Fujitsu Microelectronics, Inc. [CW, May 30], according to Wang.

The Wang Simm integrates nine 64K-bit dynamic RAM and related decoupling chip capacitors into 64K bytes of memory with parity for error detection, a spokesman explained. The upgradeable module is an example of a "uniquely packaged hybrid technology" with simplified circuitry that replaces leadless ceramic chip carriers with plastic chip carriers, thereby easing circuitry condensation.

According to Robert Chen, director of peripheral devices in Wang's research and development department, using the plastic chip carrier in place of the more expensive gold-plated lead-

less chip carrier "has enabled Wang to achieve the advantages of high-density packaging characteristics of leadless chip carriers at a cost ... approaching current plastic dual in-line packages."

While a spokesman declined to say which products the chip will be used in, he did say the chip would be used in both its minicomputers and microcomputers.

Wang is discussing sales agreements with National Semiconductor Corp. and Texas Instruments, Inc., both of which have developed models similar to the Wang Simm. National Semiconductor, which plans to market a modified version of the Wang Simm with surface-mounted chips on ceramic, will make its module available in early 1984, according to National Semiconductor.

The Wang module includes additional address pins to enable upgrading and retrofitting on existing systems. The company said that "in the near future" it will be assembling 256K-bit dynamic RAM components based around Simm.

The module currently costs \$5.50.

More information on the chip is available from Wang, One Industrial Ave., Lowell, Mass. 01851.

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Packaged Configurations

DEC Cuts Prices on VAX Packages

MAYNARD, Mass. — Digital Equipment Corp has announced 17% to 30% price reductions on packaged system configurations of its VAX-11/730 processors. The reductions apply to three configurations: two single-cabinet end-user packaged systems and a basic OEM configuration.

Each of the end-user packaged systems has been re-

duced by \$10,000. The entry-level, single-cabinet system, which includes the VAX-11/730 processor, 1M byte of main memory, two RL02 disk drives (a total of 20M bytes), a DMF32 communications controller, LA120 Decwriter III console terminal and VMS operating system with full support, now costs \$38,900. The same system, with a VMS license only,

costs \$29,500, according to a DEC spokesman.

The second VAX-11/730 packaged system, also housed in one cabinet, includes R80 (Winchester) and RL02 (cartridge) disk drives for a total of 131M bytes of fixed and removable storage. With 1M byte of main memory, controller, LA120 terminal and VMS operating system with full support, the system costs \$49,400, the vendor said.

The OEM packaged system, which consists of a VAX-11/730 central processor and 1M byte of main memory in a rack-mountable enclosure, now costs \$19,990, including the VMS operating system. The configuration used to cost \$28,500, DEC said from Maynard, Mass. 01754.

Firm's Move To Center Completed

(Continued from Page 77)
 reinstall), test out the new system configurations and be up and running," Kovich said.

The committee and a group of nine technicians broke the project down into 150 tasks that evolved into an "hour-by-hour" moving schedule. Coordinating the timing of all the tasks and different personnel involved proved to be a major project in itself. For example, representatives of several teams of technicians from three vendors (IBM, Amdahl Corp. and Memorex Corp.) attended several planning sessions to schedule manpower and assure supervision for the move.

Other associated tasks included providing security during the move and developing a communications program to alert employees to the move. Preparing the new center was no small job, Kovich said. A checklist included a floor plan showing all system configurations, wiring and telecommunications; equipment lists showing new locations; meetings with the telephone company to plan the installation and cut-over schedule for leased lines; sufficient power sources in sufficient quantity; and doors wide enough to allow delivery of equipment.

For Union Mutual, careful planning was the key to success. It was able to complete its data center move 13½ hours ahead of schedule, and after a successful trial run, the decision was made to go on-line with full production 24 hours ahead of schedule.



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Communication Networks: Alternatives for the '80s. In five 20-30 minute color video sessions, you'll hear from industry experts FCC Chairman Mark Fowler, American Bell/AIS President Arch McGill and Dr. Dixon Doll, along with others, sharing their insights on topics such as short-haul microwave, PBX technology, communications processors and satellite technology.

Local Area Networks: The Major Considerations. In this Conference Journal, data communications pioneer Dr. John McQuillan is joined by Diana Last and Drs. Kenneth Thurber and Howard Frank. Four video sessions focus on the capabilities and architectures of LAN communications: the baseband vs. broadband debate, choosing the best system for your needs, flow control, and diagnostic network monitoring.

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IBM Process Manufactures Carriers for Microchips

HOPEWELL JUNCTION, N.Y. — IBM has developed a new way of manufacturing the ceramic carriers used to hold microchips inside a computer system. The manufacturing process involves an automated plating line that reportedly allows IBM to imprint nickel and gold conductors on ceramic carriers more efficiently than was previously possible.

The nickel and gold plates are used to connect microchips on the ceramic multichip carriers that make up a computer system's subassembly. The automated plating process prepares the top and bottom surfaces of the ceramic substrate for chip and I/O pin attachment. I/O pins are the electrical connections to the next assembly level, a spokesman ex-

plained. With the automatic process, an IBM Series/1 minicomputer now controls the formerly manual process.

The computer-controlled plating line features 20,000 square feet of the highest grade clean room facilities and according to IBM, is the most advanced multilayer ceramic microchip carrier in the industry.

Previously, a manual process was used in the plating operation, which required an operator to handle the product. The automated plating line requires very little human contact with the ceramic carrier. This, IBM said, reduces the chance of product contamination and defects. In addition, the system also automatically records variables such as time, tem-

perature and acidity. These records used to be kept manually, IBM said.

The automated plating operation simultaneously processes up to 72 chip carriers at a time. An automatic transport moves each group of carriers through 35 sequential chemical operations. The line consists of 172

modular sections, each two feet wide, and is capable of producing multiple batches of parts simultaneously. Each modular section of the line is self-contained, including its own power supply, control panels, exhausts and chemical drains, IBM said.

Apple-Compatible System Runs Over 15,000 Packages

THOUSAND OAKS, Calif. — Albert Computers, Inc. has introduced an Apple Computer, Inc.-compatible computer that is said to be an alternative to the Apple IIe.

The Albert is compatible with Apple disk drives and through Apple's DOS Version 3.3 operating system, and can run over 15,000 Apple-compatible software packages.

The 64K-byte system provides red-green-blue color graphics with a 256-color palette, using six colors at a time, according to the vendor. Background and foreground colors can be changed.

Other standard features of the system include a 40-col. format, expandable to 80 col.; A/D and D/A converters; detached typewriter-style keyboard; built-in communications for RS-232, RS-422 and RS423; serial and parallel printer ports; and five internal I/O expansion slots.

Options include an uninterruptible power supply, battery charger/backup, joysticks and expansion to 192K bytes of memory without the use of expansion slots.

The Albert's basic configuration retails for \$1,595, Albert Computers said from 3170 Los Feliz Drive, Unit C, Thousand Oaks, Calif. 91362.

MRI Micro 500 Tracks Costs, Inventories

Manufacturing Resources, Inc. has introduced a computer system featuring software that allows tracking inventories, costs, production and performance.

The MRI Micro 500 system includes a Digital Equipment Corp. LSI-11/23 microcomputer, 256K bytes of memory, a 20M-byte hard disk drive, 150 char./sec matrix printer and a video display terminal.

Designed for specialty manufacturing and job shop scheduling, the system reportedly projects manufacturing, material and outside service costs for accurate quoting and maximum profits on won jobs.

The system is priced at \$29,995, with optional accounting software for \$2,000. More information is available from Manufacturing Resources at 331 Montvale Ave., Woburn, Mass. 01801.



WHAT THE HECK IS AN EXECUTIVE WORKSTATION?

A lot of people have the wrong idea of how you should use a personal computer. And fancy phrases like "executive workstation" only hide the benefits of personal computing under a cloud of tech-babble.

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Because when "non-computer people" use personal computers in business, the *software* they use is always more important than the hardware that's used with it.

But sometimes this software's just too hard to use, or can't do the job. Or it's already out-of-date. All of which confuses the same people it should be helping. We'd like to clear up some of that confusion.

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This means you only need one software package to make your personal computer do everything it was designed to do in the first place. And then some.

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With the MBA, for instance, you can connect a personal computer to your company's main computer to retrieve business information. Like

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While using the MBA's spreadsheet function, you can instantly graph and chart vital figures on the same screen. So, as you make cost or revenue assumptions, you can see immediately how the result would affect your business - this year, and five years from now.

And when you've made your decision, use the MBA's executive report writer to put words, numbers, and graphs together in a clean, printed report.

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If you have an IBM PC, we'll also be glad to send you a free copy of our Context MBA Sampler Disk that gives you a live demo of the MBA.

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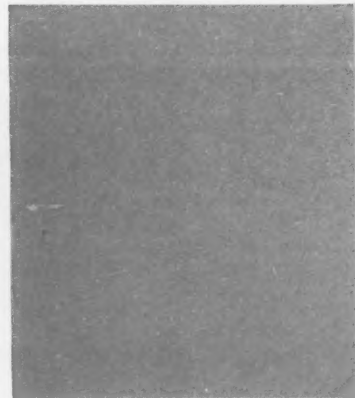


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Cromemco Unveils 21M-Byte Disk

MOUNTAIN VIEW, Calif. — Cromemco, Inc. has introduced a new 21M-byte hard disk drive that can be used as a large-capacity storage medium in Cromemco systems or as a peripheral device.

The subsystem, designated the Model HD-20, consists of a 21M-byte Winchester disk drive and the vendor's WDI-II hard disk interface card.

The WDI-II interface card, included with the disk drive

in the HD-20 system, reportedly provides an interface between an S-100 bus computer system and the hard disk drive. Cromemco reportedly plans to use the HD-20 subsystem in all of the hard disk versions of its microcomputers.

Current users of Cromemco computers may upgrade their systems by purchasing the HD-20 as a peripheral product and installing it inside the cabinet.

The complete price of the HD-20, including the 21M-byte hard disk drive, the WDI-II interface card and one-year warranty, is \$3,995.

Cromemco can be reached through P.O. Box 7400, 280 Bernardo Ave., Mountain View, Calif. 94039.

CEI Unveils Multiuser Systems

WINTER PARK, Fla. — Control Electronics, Inc. (CEI) has announced the release of two multiuser computers, the Control/9000 and the Control/Net.

The Control/9000 is a four-user Digital Research, Inc. MP/M-based system. The Control/Net serves up to 10 users under Software 2000, Inc.'s Turbodos operating system. Prices start at \$6,195 for a four-user, 10M-byte system, including software.

Both computers will be marketed nationwide directly through retail computer dealers and systems integrators. CEI is located at 707 Nicolet Ave., Winter Park, Fla. 32789.

Tool Handles Reservations

NORWALK, Conn. — Hotel Data Systems, Inc. has announced a turnkey lodging management software package based on a Stratus Computer, Inc. Stratus/32 Continuous Processing System.

The on-line system includes functions for reservations, registration, guest accounting, city ledger/accounts receivable, night audit procedures and property utilities. No data processing experience reportedly is required to use the system.

The price of the turnkey package starts at \$200,000 from Hotel Data Systems at 83 Wall St., Norwalk, Conn. 06852.

Card Expands Video Display

CHERRY HILL, N.J. — Franklin Computer Corp. has introduced a display card designed to expand the video display capabilities of its Franklin Ace 1000 and Apple Computer, Inc. Apple II computers to a full 80 columns by 24 lines.

The Ace display card reportedly provides four cursor choices.

The card is priced at \$199, according to the vendor. Franklin Computer is located at 2128 Rt. 38, Cherry Hill, N.J. 08002.



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Whether you need full color, or can get by with basic green, the exciting Esprit III should get first billing in all your TVI 925 roles. It delivers more performance, and costs less to buy!

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Esprit Systems, Inc.
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Using OCR-A, Conventional Copy

Ticketing System Marks Tags

PHILADELPHIA — Soabar, an Avery International Company, has announced the SPX-50, an intelligent imprinting system which marks OCR-A or conventional copy on retail tags and labels.

The unit can be used in distribution centers and in store locations.

Tape Controllers Introduced For DEC Minis

ORANGE, Calif. — MDB Systems, Inc. has introduced a line of magnetic tape controllers for Digital Equipment Corp. PDP-11 and LSI-11 mini-computers.

Designed to control any combination of modes and speeds on four drives simultaneously, the Model MLSI-TM-11 controller interfaces NRZI, PE and combined NRZI-PE drives on a single board, according to a vendor spokesman. The controllers are transparent to DEC operating system drivers and diagnostics. They are 16-, 18- and 22-bit bus compatible and include automatic self-test.

The controllers are said to feature a nonvolatile static random-access memory to handle multiple tape drive speeds, densities and Unibus address modes.

The controllers are priced at \$2,950. More information is available from MDB Systems at 1995 N. Batavia St., Orange, Calif. 92665.

GS-1000 Updated For Builders

DENVER — Auto-Trol Technology Corp., maker of turnkey computer-aided design and manufacturing systems, has announced a release of its GS-1000 graphics software to customers in the architectural, engineering and construction industries.

Release 4 is said to include support for the California Computer Products, Inc. 1055 plotter, as well as added functions within the several commands used to dimension, display and associate graphics data.

In an effort to support international users better, the firm has enhanced existing methods for using metric as well as English units of measurement in its graphics drawings.

A basic Auto-Trol AD/380 turnkey system, based on a Sperry Corp. V-77 minicomputer, starts at \$180,000 from Auto-Trol through P.O. Box 33815, 12500 N. Washington St., Denver, Colo. 80233.



The SPX-50 allows retailers to standardize their ticketing systems store-wide, the vendor said.

The SPX-50 can be controlled online from a mainframe processor or downloaded from a microcomputer. Virtually any mainframe or microcomputer can use the SPX-50. However, the user may have to develop special software, the vendor said.

Features of the SPX-50 include keyboard control and visual display for stand-alone operation, automatic knife, tag stacker, automatic rewind and next-step automatic label coiler, the vendor said.

The SPX-50 costs from \$6,495, Soabar said from 7722 Dungan Road, Philadelphia, Pa. 19111.

Firm Unveils 16-Bit Unisystem-PC, Boasts Compatibility With IBM Micro

ROCKVILLE, Md. — International Systems Marketing, Inc. (ISM) has announced a 16-bit microcomputer called the Unisystem-PC that is compatible with IBM's Personal Computer.

Standard features of the desktop system include Intel Corp.'s 8088 microprocessor, 256K bytes of internal memory, two floppy disk drives of 720K bytes, video monitor, two RS-232 ports, one parallel printer port, 8K bytes of erasable programmable read-only memory (EPROM), speaker port, eight levels of interrupts and text that can be highlighted by underlined, blinking, reverse image, or

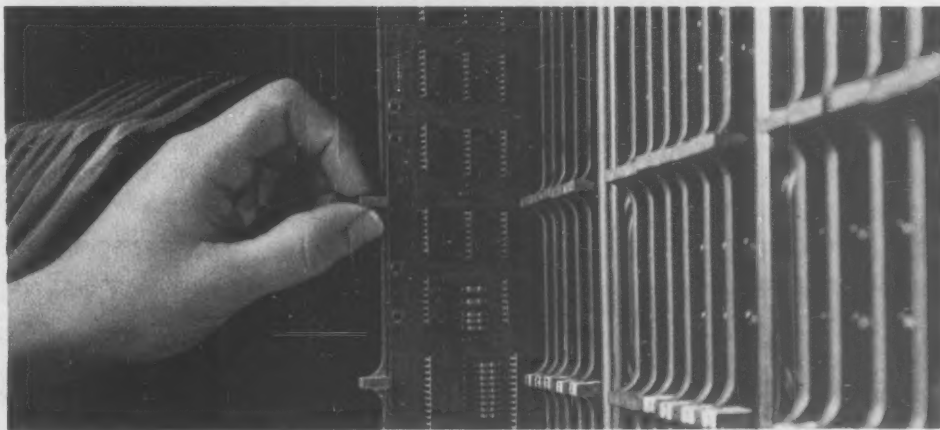
high-intensity characters.

The system is compatible with Microsoft, Inc.'s MS-DOS operating system and runs all off-the-shelf IBM Personal Computer software. Available options include additional internal memory to 1M byte, color graphics monitor and printer, 8087 computational chip, four additional expansion slots and Digital Research, Inc.'s CP/M 86 operating system.

Scheduled for delivery in the fourth quarter, the Unisystem-PC will sell for \$2,595 ISM said from Suite 6, Jackson Place S., 932 Hungerford Drive, Rockville, Md. 20850.

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HP Machines Get Disk Subsystems

SAN JOSE, Calif. — Bering Industries, Inc. has announced 12 Winchester disk subsystems for Hewlett-Packard Co. computers that range in capacity from 5M to 15M bytes and feature optional 3½-, 5¼- or 8-in. floppy drives.

The Series 3000 subsystems are hardware- and software-compatible with the HP 61000, HP 9000, Series 80, Series 100, Series 200, Series 250, HP 9845, HP 9835

and HP 9825 computers.

Prices for the Series 3000 start at \$3,790. More informa-

tion is available from Bering Industries at 747 E. Brokaw Road, San Jose, Calif. 95112.

Flatbed Plotter Unveiled

HARTFORD, Conn. — The Gerber Scientific Instrument Co. has announced a high-speed, precision flatbed plotter for a variety of high-speed, high-precision drafting applications.

The Model 78 operates at speeds of 3,600 in./min with

a 1G-byte acceleration to reduce the design cycle and turnaround time, a spokesman explained.

The Model 78 drafting system is available for \$91,500 from Gerber Scientific through P.O. Box 305, Hartford, Conn. 06101.

Plug-In Accelerator Targets MC68000-Based Systems

LOWELL, Mass. — Sky Computers, Inc. has introduced a Versabus-compatible, plug-in, floating-point accelerator for MC68000-based systems.

The SKYFFP-V is a single Vbus card capable of a 3-msec, 32-bit floating-point multiply, the vendor spokesman said. The processor operates on data in 32-bit single-precision and 64-bit

double-precision IEEE-standard floating-point formats. The standard processor configuration contains 4K bytes of either random-access memory or programmable read-only memory which is expandable to 8K bytes of program memory.

Other features include basic and advanced arithmetic functions, a writable control store, a set of runtime modules that replace existing software emulation subroutines. The SKYFFP-V is completely user transparent, requiring no modification to existing Fortran, Pascal or C language programs.

The SKYFFP-V lists for \$2,600 from Sky Computers, located at Foot of John St., Lowell, Mass. 01852.

HP Series 200 Discounted

PALO ALTO, Calif. — Hewlett-Packard Co. is offering its HP Series 200 Model 16 microcomputer with the Context Management Systems, Inc. Context/MBA software package for \$1,000 below list price. The offer is available through Sept. 15.

The discounted system includes an HP 912 dual micro-floppy disk drive and HP's tilt-and-swivel device for up-down, right-left screen movement. Customers who buy a system before July 20 will receive a year's worth of free service, HP said.

The discounted price is \$7,230, available from HP and authorized dealers. Customers must buy the entire system to get the discount, HP said from 3000 Hanover St., Palo Alto, Calif. 94304.

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acm



Bits & Pieces

Power Conditioners Solve Noise-Related Problems

SAN DIEGO — Topaz, Inc. has announced the availability of its three-phase Line 2 power conditioners for noise suppression, microcomputer-controlled voltage regulation and output receptacle panels for power distribution.

The conditioners include an Ultra-Isolator that enables the conditioners to eliminate noise-related problems such as program errors and circuit damage, according to a vendor spokesman.

An internal microcomputer monitors input voltage and controls the power conditioner's voltage regulator. With output receptacle panels,

the power conditioners can reportedly simplify computer-room power distribution.

Prices start at \$7,300. More information is available from Topaz at 9192 Topaz Way, San Diego, Calif. 92123.

K/W Control Systems Offers Inverter Controller Module

MIDDLETOWN, N.Y. — K/W Control Systems, Inc. has announced an uninterruptible power supply (UPS) inverter controller module that reportedly converts existing 415Hz frequency converters into complete UPS systems.

Designed for retrofit onto existing Pillar 40 kVA and 75 kVA silent block frequency converters, the unit

is designed to be mounted on the existing units.

The unit features a control system design that allows for a zero power transfer from utility to the inverter system without interruption of power to the computer system, eliminating the transfer of the load from utility to inverter.

The unit is priced at \$14,500 from K/W Control Systems at S. Plank Road, Middletown, N.Y. 10940.

Removable-Media Drive Out for Apple II, IIe Users

BIRMINGHAM, Ala. — Digital Electronic Systems, Inc. has announced Hard Disk, a removable-media, 5M-byte disk drive for users of Apple Computer, Inc. Apple II and

Apple IIe microcomputers.

The Hard Disk features a 70-msec average access time and a 100 mm disk. The unit provides on-line access to the equivalent of more than 34 floppy disk drives.

In addition, Hard Disk can be used to exchange data between Apple and Digital Electronic microcomputers, the vendor said.

A Hard Disk controller board fits into an Apple interface slot. The Hard Disk, controller, manual and software costs \$1,295, Digital Electronic Systems said from 107 Euclid Ave. Birmingham, Ala. 35213.

Interfaces Introduced, Link Scanners to DEC Systems

NASHUA, N.H. — Imagitex, Inc. has introduced a set of computer interfaces that allows the company's Imagitizer series of scanners to connect to Digital Equipment Corp.'s Unibus-, Multibus- and VME-based computers.

The Imagitizer 1085 is a desktop, high-speed, laserless scanner that includes a Motorola, Inc. 68000 microprocessor. Continuous-tone images are digitized into 256 different grey levels, automatically distributed across the gamma range of the individual image, a spokesman said.

The interfaces are included in the \$25,000 price of the Imagitizer. More information is available from Imagitex at 77 Northeastern Blvd., Nashua, N.H. 03060.

TRS-80 DMP-120 Printer Aims at DP Applications

FORT WORTH, Texas — Radio Shack has announced the TRS-80 DMP-120, a 120 char./sec dot matrix printer intended for data processing applications.

The DMP-120 prints monospaced characters (standard and condensed) and graphics characters and is code-compatible with all other Radio Shack printers, with the exception of some word processing codes. Also, the DMP-120 operates in two modes — character printing and graphics mode. Three types of paper can be used with the DMP-120: standard typewriter paper, standard 8½-in. roll paper or standard fanfold forms.

The TRS-80 DMP-120 printer costs \$499.95 from Radio Shack, located at 1800 One Tandy Center, Fort Worth, Texas 76102.

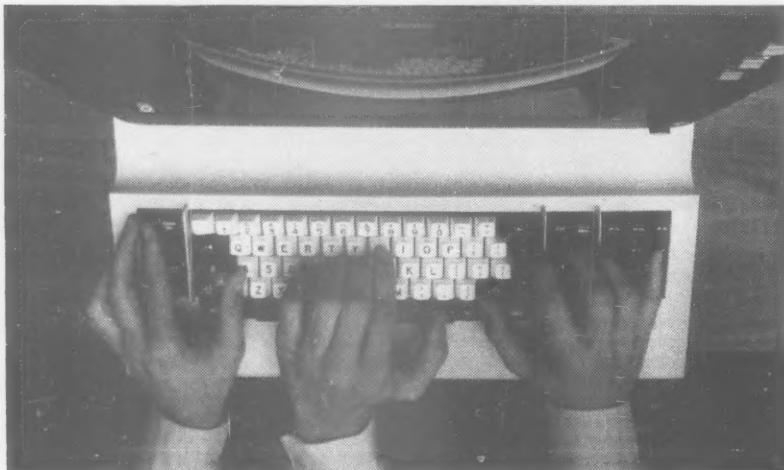
P1350 Dot Matrix Printer Out For Micros, Word Processors

TUSTIN, Calif. — Toshiba America, Inc.'s Information Systems Division has announced the availability of its P1350 desktop dot matrix printer for IBM, Apple Computer, Inc., Digital Equipment Corp. and other leading personal computers and word processors.

The 123-col. P1350 reportedly provides letter-quality work, high-speed drafts and dot-addressable graphics. Draft-quality work runs at 192 char./sec; letter-quality work runs at 100 char./sec, and graphics are produced at a density of 180 by 180 dot/in. Standard interface is Centronics Data Computer Corp.-compatible, with RS-232C serial hookup available.

Suggested retail price is \$2,195 from Toshiba, 2441 Michelle Drive, Tustin, Calif. 92680.

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To Provide Numerous User Benefits 'Short-Bus' Local-Area Net Previewed

By Phil Hirsch
CW Washington Bureau

BOSTON — A radically different local-area network that will reportedly offer significant user benefits was described here by A.S. Acampora of American Bell, Inc. at the recent International Conference on Communications sponsored by the Institute of Electrical and Electronics Engineers.

The new "short-bus" network consists

essentially of dispersed terminal devices connected by long access links to interface units located close to each other, typically within a single equipment cabinet that serves as a network node. The interfaces are connected to each other by a high-speed but short communications bus or ring.

In conventional local-area networks, by comparison, the interface units are placed close to their associated terminals, and a

long common communications link, usually a bus or ring, ties them together. One drawback of this latter arrangement, according to Acampora, is that it generates contention problems.

Although he noted that techniques such as Carrier-Sense Multiple Access/Collision Detection (CSMA/CD) have been developed to deal with this problem, he said their performance tends to degrade as the number of terminals grows, message traffic increases and/or the common message path lengthens.

'Perfect Scheduling'

The throughput-delay performance of CSMA/CD and similar collision reduction schemes "is often compared with that achieved by 'perfect scheduling,' where both collisions and channel idles during busy periods are eliminated," he added. This represents "a desired but generally unattainable level of performance in a distributed system. One of the remarkable features of a centralized short-bus architecture is that perfect scheduling of message transmissions is possible using a very simple media access protocol," he said.

The new system also provides the user with multiple message priorities as well as circuit- and packet-switching options, Acampora said. The overhead cost is "as little as three bits per packet."

With these features, "efficient integration and servicing of disparate traffic types — real-time voice as well as synchronous data — are readily achieved," he explained.

Other benefits of a short-bus local-area network, according to Acampora, include easier maintenance, less chance of one user eavesdropping on another and less susceptibility to electromagnetic interference. Where terminals are so far apart that connecting them to a single node is impractical, the new American Bell local-area network provides for use of concentrators, each of which is then linked to a central node, Acampora said. Alternatively, multiple nodes can be installed. Optical-fiber transmission links are then used to interconnect the concentrators and/or nodes.

By designating one interface within a particular node as a gateway, the network can provide access to the outside world.

Electronic Mail Package Unveiled For Users of HP 3000 Supermini

PITTSBURGH, Pa. — Softworks, Inc. has announced Mailbox, an electronic mail package for users of the Hewlett-Packard Co. HP 3000 supermini computer.

The package can perform basic write, send, read and print functions and offers a two-level security feature, the vendor said.

Mailbox allows users to check memos that are in their mailboxes. Memos can be read on a CRT terminal or printed. Users can also delete messages after reading them. Messages can be written using a standard Mailbox format that automatically provides spacing for headings. In addition, users can write a free-form docu-

ment, the vendor said.

Mailbox does not require special system capabilities, according to a vendor spokesman. All programs are written in standard HP languages and subsystems. Five hundred sectors of disk storage are needed to load the package, and any terminal that can communicate with the HP 3000 can use most of the features of the Mailbox package. The package can accommodate terminals accessing the HP 3000 via dial-up modems or acoustic couplers, the vendor said.

Mailbox costs \$475 from Softworks, located at 55144 Wilkins Ave., Pittsburgh, Pa. 15217.

Keyboard Mouse Announced For IBM Personal Computer

REDWOOD CITY, Calif. — Product Associates, Inc. has announced a Keyboard Mouse for users of IBM's Personal Computer that is compatible with all applications and graphics packages.

No additional programming is required to use the mouse, according to the company, and the device includes an intelligent interface. The Keyboard Mouse plugs in

between the keyboard and the system. The Keyboard Mouse is self-contained and interfaces with the Personal Computer as a supplementary keyboard, the vendor said.

Users can change the programmable unit's cursor and command control codes from the keyboard. Custom models are available for special applications and up to five additional key switches can be added, the vendor said.

The Keyboard Mouse costs from \$150 to \$295, Product Associates said from 465 Convention Way, Redwood City, Calif. 94063.

Conversion Service Out for CPT Corp.

BALA CYNWYD, Pa. — General Information Services, Inc. has announced a data/media conversion service that allows users of CPT Corp. word processors to transfer information to and from other vendors' computer systems.

The data conversion service enables clients to transfer typewritten and typeset information to a digital format. Data is converted using artificially intelligent optical scanners that transfer information at approximately 20 to 30 times faster than human data entry operators. The information is transferred virtually error-free, the vendor said.

Conversions can be made from tape to hard or floppy disk, disk to tape or floppy disk. General Information Services can perform conversions for a variety of systems and protocols including processors manufactured by Wang Laboratories, Inc., the IBM Personal Computer and Displaywriter and microcomputers manufactured by Apple Computer, Inc.

Conversions cost about \$75/disk in single quantities. Disks cost \$50 when more than 50 disks are being converted, General Information Services said from Suite 434, 1 Bala Plaza, Bala Cynwyd, Pa. 19004.

Sperry Exec Says Communication Key to Reaping Benefits From OA

By Robert Batt

CW West Coast Bureau

SANTA CLARA, Calif. — Improved organizational communication is the key to achieving maximum benefits from office automation, according to James Commander, director of systems design at Sperry Corp.

Speaking at a recent seminar here, Commander said organizational communication is critical because a majority of today's products require a team effort to design, build, market and service.

"Very few products are built with one individual handling all phases of product development," Commander said. "Product quality is becoming a critical issue due to the competition in the global marketplace, which is straining the old established methods of production and management."

The basic tools being used in an office to create and manage data have been around for 50 to 100 years, and office costs continue to rise and possibly double every seven years, he added.

"When we look at the office and its method of operation, we see an unstructured environment that is event-driven and with office workers under a paper avalanche. The key characteristic of the normal workday of a manager or professional is that information arrives randomly, and the most difficult task is to organize the pieces of information in a coherent manner," he said.

The key to improving the product development cycle is efficient communication, Commander asserted. In this regard, a vital area currently being overlooked by the data processing industry

(Continued on Page 88)

Communicate to CW Readers About Your Terminals

Computerworld is looking for a few good stories on data communications terminals. An Aug. 29 Special Report on the subject is now in the making and contributions are requested by July 18.

Stories may take two forms:

- Tutorials covering a trend or direction in data communications terminals. For example, how will data communications terminals compete with personal computers? What are some new uses of these terminals? Who should be given such a terminal? Can non-communicating terminals be upgraded for networking?

- Case studies of users who have solved specific business problems with certain types of data communications terminals.

Submitted articles should be between four and six double-spaced typewritten (no dot matrix, please) pages in length. Authors are encouraged to include any camera-ready art of charts or graphs and black-and-white photographs pertaining to the article.

Articles should be sent to Jim Bartimo, Computerworld Editorial Department, Box 880, 375 Cochituate Rd., Framingham, Mass. 01701.

Tandy Offers VIS Package

FORT WORTH, Texas — Tandy Corp. has introduced a videotex and office information system for information storage, retrieval and distribution. The VIS hardware and software package is said to allow access to large data bases stored in the desktop TRS-80 Model 16B computer.

VIS is a two-way interactive system that transmits information electronically.

Any terminal or computer with terminal capability may be used to display and receive text, graphics and computer programs, a Tandy spokesman said.

Using a computer in an office or a portable remote terminal, the VIS allows checking of factory orders against usable inventory, corporate sales figures and production capaci-

ty, client or patient reports, a spokesman said.

The VIS application package is available for a one-time license fee of \$3,500. An additional \$1,000 is charged for a multiplexer software support module.

More information is available from Tandy, 1800 One Tandy Center, Fort Worth, Texas 76102.

Communication Key to Benefits

(Continued from Page 87)

dusty is information assimilation, he claimed.

"The capability which I believe is going to become very important in the future will be getting the data out of the machine back into the human," Commander said. "There has been very little work in the industry to handle this problem."

"Probably one of the most critical tasks a manager must perform is to assimilate and organize information to make decisions, and this is a very fertile area for office automation systems," he noted.

"We have ways to get the information into the system, we can store it, we can manipulate it. The last link in the chain is how do we get it out of the machine back into the human consciousness so that the human can use that information to make decisions," Commander queried.

Given that one of the key benefits of office automation is improving the quality and timeliness of a product, Commander said, efficient communication is one of the key attributes required to achieve this benefit from two perspectives.

- The global communications required to specify what the product should be, which requires working with marketing people and with people out in the field.

- The local communications that are critical to carrying out the business plans of an organization.

Looking ahead to future product developments, Commander said that automation of electronic filing must transcend its current status, which is basically the duplication of existing office filing systems.

Future systems must be able to search for information and gather it together for the manager to analyze and potentially use it in the decision-making process.

'Electronic Management'

Another area of automation that is very important is electronic office management, he said. The required functions are to have the computer manage the routing of information to the proper individuals and to have capabilities that take care of exceptions, returning such forms back to the originator for corrections.

"Electronic forms management will be one of the most difficult problems to solve in that what we will be trying to do is actually program the operational characteristics of a business enterprise," Commander concluded.

"The task that must be undertaken is to translate business procedures into an automated flow of work through the organization."



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Study Predicts Major Engineer Shortage

By Bill Laberis
CW Staff

PALO ALTO, Calif. — The return to a healthy economy and a continuation of the information processing boom will result in a shortage of more than 113,000 electrical and computer science engineers by 1987.

That is the bleak conclusion of a study released this month by the American Electronics Association (AEA), based on a survey of 815 manufacturing facilities in the U.S. employing more than 736,000 people.

Even though the AEA compiled data during the recession months of early 1983, the results do not differ appreciably from those derived from a 1981 study, which projected a shortage of 129,000 electrical and computer science engineers by 1985.

The most recent study predicted a need for approximately 197,662 new computer and electrical engineers over the next five years, while the 1981 study projected a need for 198,191. However, an estimated 84,000 new bachelor-level electrical and computer engineers will be available to fill these positions,

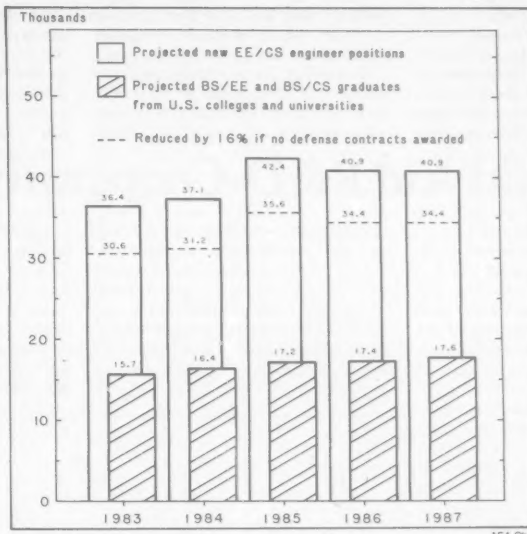
thus the resulting shortages.

Job categories with the highest projected growth over the next five years include: software engineering, 115%; electronic engineering technologists, 107%; and computer analysts and programmers, 103%, the report found.

"The need for qualified technical employees extends into both the professional and para-professional areas," the report stated. "Although the need for assemblers, drafters and electronic technicians will fall some, all job categories but one are forecast to have double digit increases [through 1987]."

Overall, survey respondents projected 46% annual employment growth in the electronics and information processing industries over each of the next five years. According to the AEA, electronics as an industrial category will rank second in terms of total employment by the end of the century, compared with its present 10th place ranking.

According to Pat Hill Hubbard, who authored the study, "This second survey ... reinforces many of the conclusions reached in the first study. If we



Five-Year EE/CS Engineer Supply and Demand. A little more than 84,000 students will graduate from colleges across the U.S., leaving a projected engineering shortfall of 113,406.

aspire to world technological leadership, we must be willing to assign the financial and other resources necessary to close the gap between anticipated

jobs and available engineers."

More information about the study is available from the AEA at 2680 Hanover St., Palo Alto, Calif. 94304.

What's in a Name?

By Naseem Javed
Special to CW

Over 80% of North American computer company names are no good.

The majority of names are generic, such as Datacom, Data General, Dataline, Data-tech and so on. Many computer company names are identical in part to the names of other existing companies, but merely rearranged to form new names. General Datacom, Data General and Comdata Services are some examples.

With over one million new business and product names being registered every year in North America, accurate information on the impact, effectiveness and global registrability of a new product or company is fast becoming one of high technologies' most serious problems. A recent survey by INC. magazine revealed that in 20% of the 100 fastest growing companies in the U.S., "systems" or "technology" is part of the corporate name.

Certain words in the high-tech industry convey high quality, professionalism and scientific achievement and might be excellent marketing names. But more likely, a portion of a company name selected has already been used by another company to identify its product.

For example, is there a difference between the companies Tandem Computers, Inc. and Tandon Magnetic Corp? To the ear they sound very similar, but in the market-

(Continued on Page 92)

White House Seeks Aid For Joint R&D

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The Reagan administration said recently it is developing legislation to give broad antitrust immunity to firms participating in joint research and development ventures.

Congress is considering several bills that would promote undertakings such as the two-year old Semiconductor Research Cooperative (SRC) and

(Continued on Page 90)

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COMPUTER INDUSTRY

Darpa Chief Touts U.S. Supercomputer Project

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The director of the Defense Department's Advanced Research Projects Agency (Darpa) said recently that the agency's new supercomputer develop-

ment project will put the U.S. far ahead of the Japanese in computer architectures and applications.

Describing Darpa's Strategic Computing and Survivability Program, for which the Reagan administration has requested \$50 million for fiscal

1984, Dr. Robert Cooper said the agency's program will differ from the Japanese supercomputer project in that the U.S. will concentrate on symbolic processing techniques rather than traditional number crunching techniques, which are the basis

for the Japanese counterpart program.

Cooper noted the Japanese are also working on symbolic, or logical, processing technologies in their fifth-generation computer project to develop superintelligent computers. He explained that the widely varying U.S. Defense Department needs dictate merging the two approaches in order to develop supercomputers that are at the same time more intelligent than current supercomputers, as well as more powerful.

Addressing a joint hearing of the House Science and Technology Subcommittee on Investigations and Oversight and Subcommittee on Science, Research and Technology last

(Continued on Page 91)

Bill Would Aid R&D-Cooperative Firms

(Continued from Page 89)

the new Microelectronics and Computer Technology Corp. (MCC). But Commerce Secretary Malcolm Baldrige and Justice Department antitrust chief William F. Baxter said the bills are too timid and would require too much bureaucratic oversight of such ventures.

Baldrige and Baxter told the Senate Judiciary Committee last Wednesday that the legislation now under White House consideration would bar all private antitrust suits against joint R&D and all government damage actions. Under this proposal, however, the government would be able to seek an injunction barring any R&D activity it deemed harmful to competition.

The testimony of Baldrige and Baxter came as electronics industry representatives converged on both houses of Congress to lobby for specific legal antitrust immunity for the R&D undertakings. Control Data Corp. Chairman William C. Norris, representing the American Electronics Association, MCC Chairman Admiral Bobby R. Inman and Peter F. McCloskey, Electronic Industries Association president, told the Senate committee that firms are reluctant to join such cooperative ventures because of the uncertainty of current antitrust laws.

Inman, along with SRC Chairman and IBM Vice-President Erich Bloch and CDC Executive Vice-President John W. Lacey, also appeared the same day before two House of Representatives science and technology subcommittees. The subcommittees are jointly studying the R&D antitrust bills as a way to respond to concerted foreign competition in high technology, particularly from Japan, and to a lesser extent from Europe.

Norris told the Senate committee that "there is an urgent need for Congress to act to clear away the uncertainties in the interpretation and application of antitrust laws as they relate to R&D joint ventures. The fear of inadvertently violating U.S. antitrust laws and the threat of treble damages are a significant deterrent to undertaking collaborative R&D."

The bill supported by these industry spokesmen is S.737 in the Senate and H.R. 1952 in the House. Each is titled "Joint Research and Development Ventures Act of 1983."

The bills would preclude criminal and treble damage liability for these ventures.

By establishing guidelines for permissible R&D joint ventures, they would allow companies to undertake these projects without prior Justice Department approval.

While praising the intent of those bills, Baldrige said "the listing of conditions for joint R&D ventures is contrary to the cornerstone of this administration's policy to minimize

government intervention in the marketplace. All that should be necessary in my view," he said, "is a notification to the government identifying the participants of a joint venture and a description of the R&D to be undertaken, accompanied by any agreements between participants."

Assistant Attorney General Baxter, pushing for a "much broader approach" than embodied in the half dozen bills now under consideration, said "those bills are too narrowly focused, create unnecessary regulatory burdens and in some ways may inhibit rather than stimulate technological innovation."

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Study Finds Micros Shifting Power to Users

FRAMINGHAM, Mass. — The emergence of the personal computer along with end users' growing demands for applications software have not only shifted the balance of end-user computer power radically, but much of this change is at the expense of a number of processing services suppliers.

This is the conclusion reached in a study published recently by International Data Corp. (IDC) here.

"The questions being asked by processing services providers are all really about how to avoid getting caught in the gears of modern times," the study said. "It appears that the personal computer is almost single-handedly responsible for a dramatic transformation of relations

between corporate [management information systems] MIS departments and their end users."

Processing services suppliers in the U.S., led by Control Data Corp., Automatic Data Processing, Inc. and General Electric Information Services Co., claimed approximately \$8.8 billion in worldwide revenues during 1982, according to the study. This reflected only 12% more than the 1981 figure, thus continuing a decline in the contribution made by processing services dollars to total worldwide software value-added revenues.

"By 1987, processing services will bring in only 30.4% of the software value-added revenue dollar," the study said.

Those hardest hit in 1982 were the remote problem-solving services suppliers, the "old line" time-sharing companies, whose 1982 revenues rose only 11% over 1981. Several firms were forced to lay off personnel, sell operating divisions and endure revenue and profit losses.

The new relationship between MIS departments and the end-users is best characterized by the information center, where end-users are trained by MIS personnel on personal computers to develop applications on their own. But much of the momentum behind the information center and this new relationship comes from the huge and growing applications software development backlog carried by DP shops — esti-

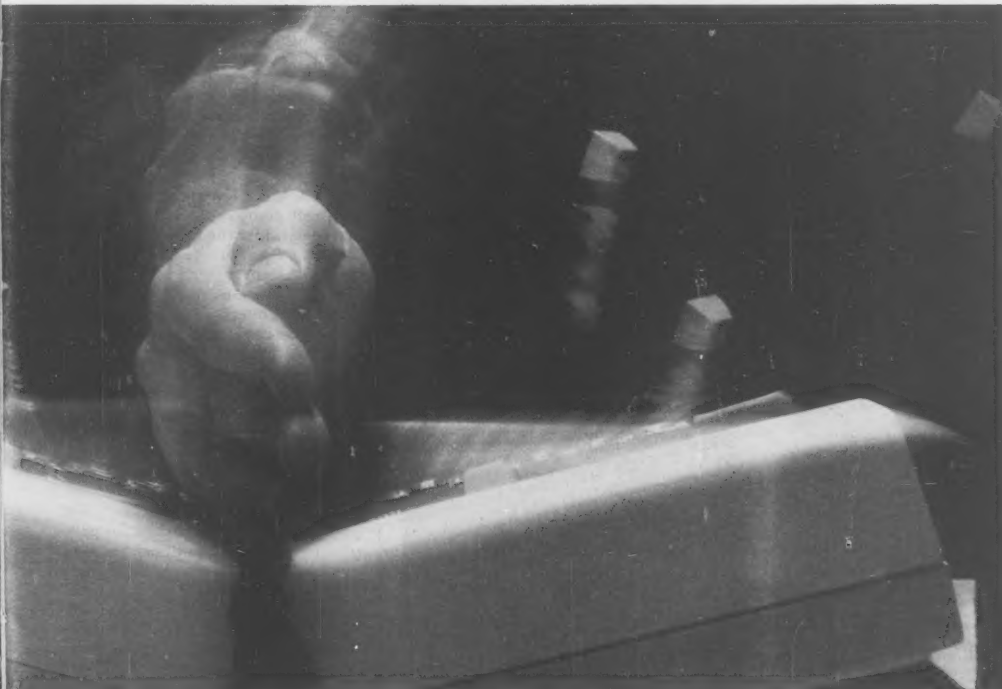
mated in an MIT study at an average of two years, the study reported.

To address the problem, processing services suppliers are experimenting with selling hardware — especially personal computers — that can be linked with their network and the software services that are delivered, according to the study.

Those companies offering remote automated transaction services — the automation of paper-based transactions — face a different set of problems, according to the study. While these "niche-oriented" companies enjoyed a stronger growth in 1982 and expect to grow much more in the next five years, they face expanding competition.

More information on the study is available from IDC, 5 Speen St., Framingham, Mass. 01701.

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Darpa Chief Lauds Project

(Continued from Page 90)

Wednesday, Cooper noted the program is primarily aimed at providing advanced computers for defense applications in the 1990s. He added, however, that "the commercial spin-offs will help the U.S. computer industry to meet, and in fact surpass, the Japanese activities."

Additionally, he said, the agency will use the program to strengthen the ties between U.S. universities and computer companies and help increase personnel training in critical technological areas. The areas to be addressed, he said, are microelectronics and very large-scale integration (VLSI) systems, computer architectures and generic software technologies.

The project will investigate VLSI circuits using gallium arsenide, optoelectronic interconnections and new ideas in packaging and VLSI architecture, according to Cooper. "Advances in these areas will be broadly applicable to new computers of many sorts," he said, "and can yield one or two orders of magnitude improvement in performance."

"A major emphasis is in the area of computer architectures for symbolic computing for superintelligent computers. These will involve large numbers of processors — perhaps millions," he continued.

Cooper added that the project will also address special-purpose architectures for extremely high-speed signal processing applications, necessary for computer vision and computer speech understanding.

Finally, he said, "We will examine different architectures for dealing with very large data bases and knowledge bases. Again, there will be corollary benefits from this work in more traditional areas," according to the Darpa head, who said "We hope to achieve three or four orders of magnitude improvement from these architectural efforts."

Turning to software development plans, Cooper said Darpa will finance research in software required for such applications as natural-language understanding, speech understanding, computer vision, image understanding and several others.

GSA Awards Retail Pact For Micros to Math Box

WASHINGTON, D.C. — The General Services Administration (GSA) has awarded a contract valued between \$20 million and \$40 million to Math Box, a computer retailer in Rockville, Md., to establish and operate a store at GSA's headquarters.

Math Box was chosen over six other dealers to sell microcomputers to federal agencies at discounted prices for government use.

Initially, Math Box will sell IBM, Digital Equipment Corp., Compaq Computer Corp., Fortune Systems Corp., Apple Computer, Inc. and Osborne Computer Corp. computers.

"I think we've got a good product representation," commented the

GSA's William Frazer, manager of the project. "The store also has the flexibility to change its products."

Subcontractors include Software Centres International of Los Angeles for software, M/A-Com Sigma Data of Rockville, Md., for management and Moore Business Centers of Blenheim, Ill., for forms, magnetic tape, disks and supplies. PC Telemart of Fairfax, Va., will provide maintenance.

Due to open Aug. 16, the store has been guaranteed \$100,000 in sales its first year in operation. If the pilot store is successful, similar retail stores will be opened at government installations throughout the nation.

Computer Firms Scolded For Poor Name Selection

(Continued from Page 89)

place they produce different products. Both are California companies, but Tandem manufactures flexible disk drives for minicomputers, while Tandem Computers manufactures multiple-processor computers.

Would you be able to identify the differences between the services of Infosci, Inofax, Infomart, Infotron, Info-Tech, Infotek, Infoglobe, Info-byte, Infocom and Infofiche, all of which are competing in the North American marketplace?

Over one-quarter billion company registrations are on file in North America. Selecting and protecting a new corporate name is not a simple

matter. Frank Delano, author of *Total Corporate Identity*, emphasized that, "A name is basic to conveying all organization and product images. It deserves the same investment and protection afforded the most valuable of corporate assets."

A common misconception on the part of the new or small company is that once a name is registered locally, it is legally yours and usable in the North American marketplace. This is not so, as witnessed by the case of United Telecommunications Corp., a Latham, N.Y., distributor of telecommunications systems that operated almost exclusively in New York since 1972. The firm was forced to change its name by United Telecommunications, Inc., a large Kansas City, Mo., telephone services enterprise that had been very active in interstate trade.

Several months later, having changed its name to UTC Group, Inc., an even larger company, United Technologies Corp., sued the smaller company, claiming legal ownership of the initials UTC when used in the communications field.

Not all firms change their names due to legal battles. With an expansion of business activities and market, firms such as IBM (International Business Machines Corp.), NCR (National Cash Registers) and DRG (Dickinson Robinson Group) sought a more identifiable image.

With a large number of high-tech firms competing to sell similar wares, a distinctive name and well-protected identity is the best competitive and legal defense in the marketplace.

In choosing the right name for a high-tech company, it is worthwhile first to consider the following checklist of the eight problems of effective name creation:

- Avoid names using highly diluted and overused words. Many high-tech words are very overused such as "micro," "data," "info," "tech," "compu," "systems," "software" or "control."

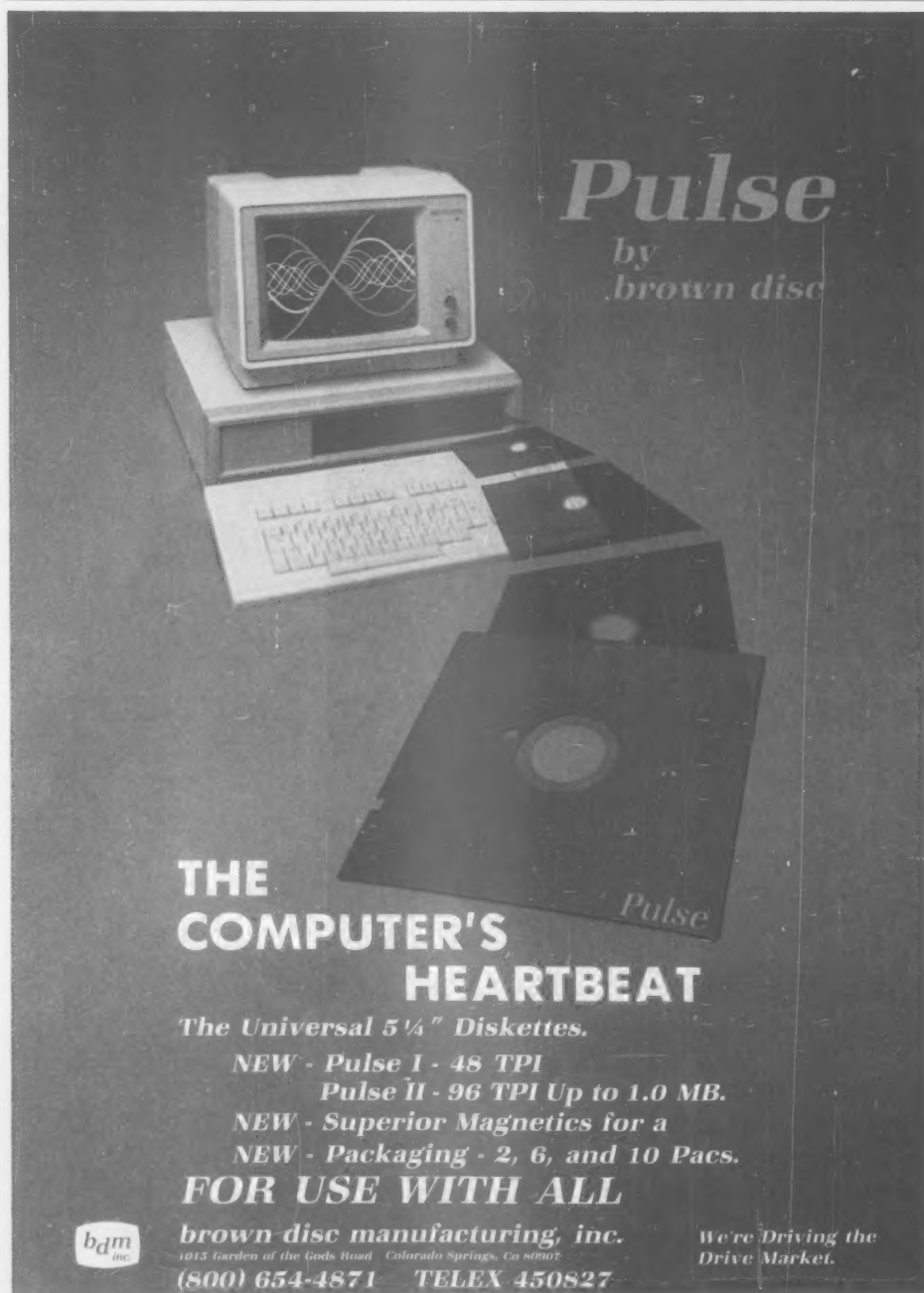
- Names in use today may not be available for extended jurisdiction when company product and distribution grows (as in the case of the Latham company, United Telecommunications Corp.).

- Names are often picked for personal reasons instead of business reasons. A small one-man firm may name his company using his children's first names — Mark and Susan — to form "Marksue Corp.," without thinking of the long-term implications for the business.

- Names that are descriptive only are not easily remembered; only the type of business, and not the product, is remembered. Human Designed Systems, Telecommunication Terminal Systems or Transaction Management, Inc. are some examples.

- Names that are difficult or confusing are quickly forgotten, for instance, Kanematsu-Goshio, Nissho Iwai or Standard Memories Trendata.

Javed is president of ABC Dial, Inc. of Toronto, which advises the high-technology industry on just what's in a name, helping its clients choose a proper title.



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Exploring Micro-Mainframe Links

ADR Announces Exchange Plan With Visicorp

By Bob Johnson

NEW YORK — Applied Data Research, Inc. (ADR) recently joined the ranks of mainframe software vendors exploring micro-mainframe links by announcing here a technical exchange agreement with VisiCorp. The agreement is expected to result in products next year that will integrate IBM mainframe and IBM Personal Computer software.

ADR said it will develop a series of software products to

run on the IBM Personal Computer which will be integrated with Visicorp's Vision Open Applications System and ADR's mainframe software. ADR will also integrate its micro products with the Vision system.

Visicorp will offer technical support for the resulting software and supply its Unix-based tool kit to aid ADR in integrating its products with Vision.

Integration of ADR's mainframe and personal computer software with the

Vision system reportedly will allow information to be shared between mainframes and IBM Personal Computers, ADR said. This will be made possible through ADR's Information Distribution Architecture, software that ADR claimed provides a single consistent view of data, regardless of the underlying data storage format and

Distribution

For DPS 6

Targets ISOs

WALTHAM, Mass. — Honeywell, Inc. has announced a distribution program for its DPS 6 small systems. The program is directed at established independent sales organizations (ISO) and will be administered by local Honeywell sales branches.

The Manufacturer's Representative Program is intended to increase the company's penetration of the small business systems end-user marketplace through orders obtained by vertically oriented software suppliers, service bureaus and consultants.

Under the program, a manager appointed at each local sales branch will be responsible for recruiting ISOs for the program within the territory covered by that branch. Prospects will be required to meet product and support requirements set by the company.

According to Theodore R. Joseph, vice-president of Honeywell's marketing and service group, the role of the manufacturer's representative will be to market DPS 6-based packaged solutions relevant to specific industry subsegments. They will provide primary customer training and software support and assume full account management responsibility with the customer base.

Honeywell, in turn, will provide the representatives with necessary software products at no charge for development of applications using a designated central system, as well as standard software support to that central system, standard promotional material and end-user documentation. The company will also supply initial sales, technical and support training, prospective leads, end-user contracts and cooperative advertising assistance.

Further information is available from Honeywell at 200 Smith St., Waltham, Mass. 02154.

organization.

To carry out its plans, ADR said it had to extend the capabilities of its software in four major areas of mainframe technology to the Personal Computer arena. This meant creating Personal Computer products for information management systems, office automation systems, decision support systems and program development systems. It also had to provide a generalized approach for communicating with the Personal Computer.

Also announced here last week was a value-added re-marketer agreement between the two companies. Under the terms of this deal, ADR will be able to market Visicorp's Vision software with ADR's planned series of mainframe/Vision-integrated products to IBM mainframe sites through its sales and support offices.

More information on these products is available from ADR at Rt. 206 & Orchard Road, CN-8, Princeton, N.J. 08540.

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


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Microchip VLSI at Vanguard of DP Revolution

By Bohdan O. Szuprowicz
Special to CW

There is a revolution under way in the electronics industry, comparable to the introduction of the transistor during the late 1950s and the integrated circuits and microprocessors of the early 1970s. It results from rapid advances in very large-scale integration (VLSI) of microchips leading to customized user-designed electronic circuits for many old and new applications.

Semiconductor companies traditionally produced standard integrated circuits, used by electronic equipment manufacturers to build calculators, computers, video games and many other devices. Large companies such as IBM, AT&T or General Electric Co. make their own custom-built microchips because their larger internal consumption justifies such specialized production.

Now developments in VLSI computer-aided engineering make it possible to custom design and produce profitably specialized integrated circuits even in relatively small quantities.

Custom-designed integrated circuits account for about 25% of the semiconductor industry output. They are expected to represent 50% of the total by 1990, while the industry volume will explode to an estimated \$90 billion during the next 10 years. Extensive customization of the output of such a large and rapidly growing industry will have a pro-

Analysis

found effect on all electronic information processing applications in whatever industry they occur.

At present, the greatest changes are taking place within the semiconductor industry itself. Established suppliers such as Intel Corp., Motorola, Inc., Texas Instruments, Inc. and the Japanese, all of whom have been grinding out standard chips for years, must now reassess their products and services. New start-up competitors are proliferating, offering customized integrated circuit products and services to end users.

The importance attached to these

new firms is best illustrated by the attention they have been getting from venture capitalists and Wall Street investors. Despite considerably higher capital requirements to launch new high-technology ventures in today's economic climate, there has not been any shortage of funds to meet their needs.

It takes \$50 million to \$75 million to start a VLSI microchip factory today. Yet when LSI Logic, Inc. went public last May, it raised \$147 million over and above the \$30 million it already received from venture capitalists. Its 7,000,000 shares of stock offered at \$21 per share were oversubscribed and promptly rose to almost \$30 in the after-market. LSI Logic raised more money than any

other new high-technology issue to date, notable for a start-up barely over two years in business.

VLSI Technology, Inc. is another custom integrated circuit start-up manufacturer that went public in February, raising \$52 million in capital by selling 4,000,000 shares at \$13. The per-share price almost doubled by early May.

The new VLSI chip manufacturers owe much of their success to the advances made in specialized computer-aided engineering workstations based on sophisticated software and powerful 32-bit microcomputers. Their specialized VLSI design software makes them critical tools for creating customized superchips of tomorrow.

Study Focuses On VLSI Products

MENLO PARK, Calif. — The worldwide market for very large-scale integration (VLSI) custom and semicustom products will be characterized by increasing Japanese competition, with the U.S. maintaining its market lead.

This is the major conclusion of "Merchant Market Sales for Leading Semiconductor Products of the Seventies and Eighties," a recent study of Gnostic Concepts, Inc., a market research firm based here.

The study said that it is a matter of time for the same cyclical growth to occur in the logic area. This has already begun, the study claimed, with worldwide sales of custom and semicustom VLSI expected to grow at 29% and 42%, respectively, between 1982 and 1985.

In custom VLSI products, merchant sales will increase from \$348 million in 1981 to \$2.7 billion in 1990, an average annual growth rate of 26%, the study predicted.

The Japanese presence will be strongly felt in the semicustom VLSI market, Gnostic said. With an annual average growth rate of 34% projected between 1981 and 1990, Gnostic claimed U.S. total market share will decrease from 61% last year to 55% in 1985, whereas the Japanese market share will increase from 18% to 21% over the same period.

The study is priced at \$4,000 and is available from Gnostic Concepts, 2710 Sandhill Road, Menlo Park, Calif. 94025.



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In DP-Related Topics

Cullinet Education Center Will Aid Teachers

FRAMINGHAM, Mass. — Cullinet Software, Inc.'s new national education center here will do double duty this summer.

In addition to meeting the training needs of Cullinet customers, the center's 15 classrooms, five labs and dedicated computer will be used to improve the computer literacy of Massachusetts elementary and secondary school teachers.

In conjunction with the official opening of the center on June 30, Cullinet announced the kickoff of a joint program with the Massachusetts High Technology Council (MHTC) to train K-12 teachers so they will be better prepared to teach

students about computer-related topics.

The program at the center consists of a five-day course that includes a full-day session covering an introduction to data processing and four days of specific training in report generation with Cullinet's integrated data management system Culprit. The program is being offered to Massachusetts K-12 teachers free of charge. The first participants are from the Education Collaborative for Greater Boston and the Education Cooperative consortiums.

"It is not computer literacy from our point of view. It is an enrichment program," John Cullinane, chairman

of the board of Cullinet, remarked at the opening of the center. He said the current program is considered a pilot process. "If it works, we will see how it can be expanded across the state."

Present for the ribbon-cutting ceremony was Lt. Gov. of Massachusetts John Kerry. He characterized the opening of Cullinet's training center and the kickoff of the MHTC program as being of critical importance for Massachusetts because they represent a continued commitment of the software firm in the state and also because they "will assist teachers in keeping the education of our children on the cutting edge."

Noting that the program represents the "public/private partnership," Kerry read a proclamation from the governor that decreed the day Computer Software Literacy Day here.

Howard Foley, MHTC president, said of the program, "It's an important step for this committee and one of many we plan to take in the future."

Apple Exec Says Firm to Enter DDP Mart

By Bob Johnson

CW New York Bureau

NEW YORK — The microcomputer is opening a new frontier in data processing, and Apple Computer, Inc. plans to be active in it, according to the company's director of strategic planning.

Speaking at a session on "DDP With Microcomputers" at the Executive Microcomputer Conference and Exposition, Russ Aldrich labeled this next DP frontier Distributed Resource Strategy.

He said Apple realizes the effect microcomputers are having on corporate DP environments, especially in distributed data processing, and thus has a distinct strategy for entering this marketplace.

"Three or four years ago, Apple snuck in the back door of DP installations," he explained. "It was common to see Apples physically in a DP shop, but on paper they were bought as various kinds of office equipment. Now, however, Apple has a consolidated strategy to walk in the front door of DP shops."

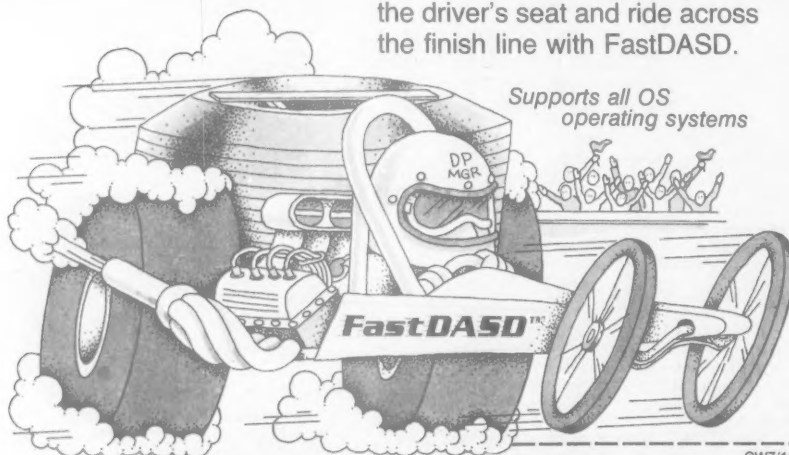
Apple's plan, he said, involves the company working closely with DP and user groups. Apple's goal, he said, is to integrate multiple corporate users into a coordinated information network. The challenge, he added, is to design systems that reinforce the management practices and skill levels of the whole organization.

"There is a common pitfall that often occurs," he warned. "The existing de facto architecture isolates the business from the people using the systems. The solution to this is to design management systems and networks to be as flexible as possible and as people-oriented as possible. Systems must work around people and be integrated into their workdays."

Aldrich said that the company will try to get the cooperation of all of the departments of a target user, including in-house users, DP, telecommunications, purchasing and so on. The executive claimed that part of Apple's plan is to monitor and update continually the entire integration of microcomputers.

Aldrich cited several factors Apple deems important in determining how a customer will select from the plethora of microcomputer offerings. Data sharing, for example, is particularly important in communications strategies, he said.

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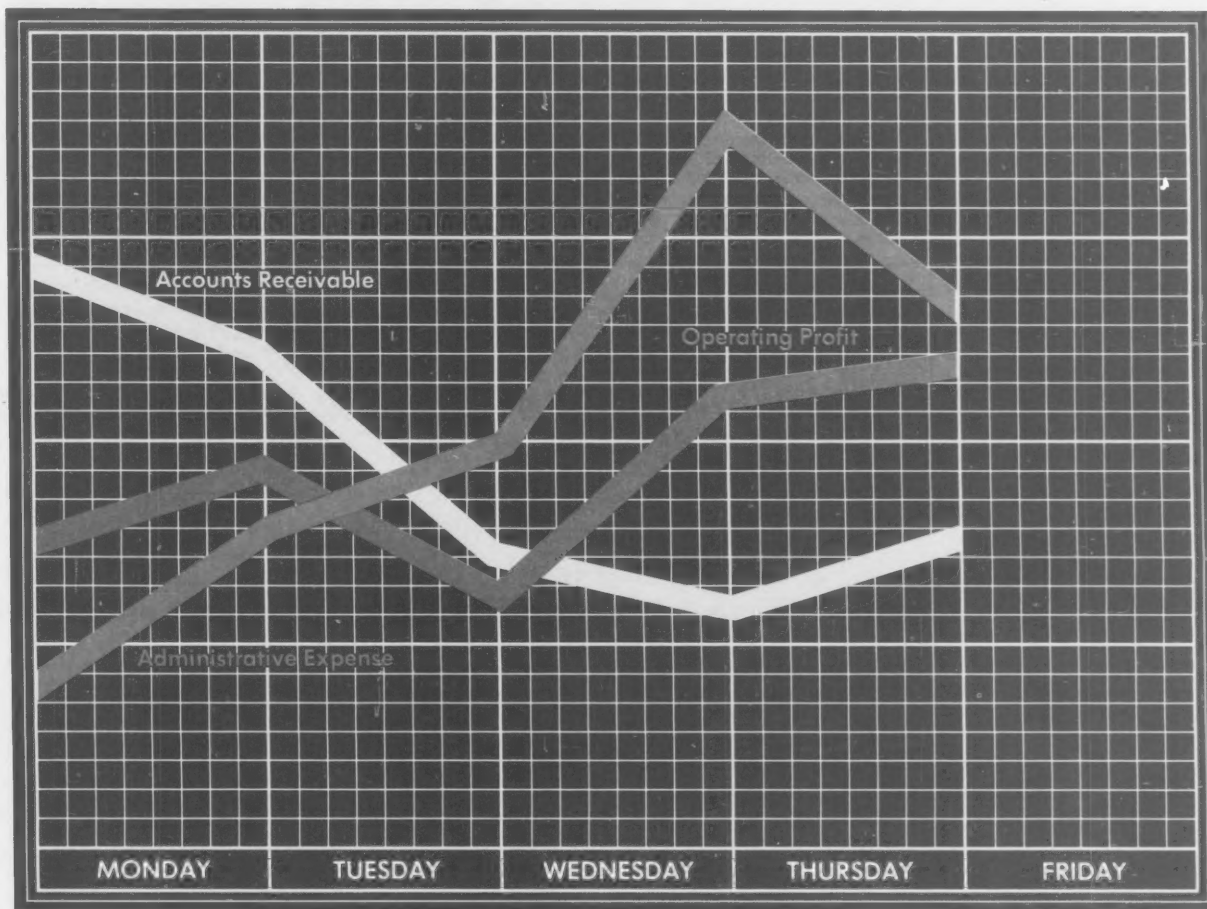
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Materials, Techniques Seen Key to Semi Output

By Robert Batt

CW West Coast Bureau

SANTA CLARA, Calif. — Improved materials and processing techniques lie at the heart of attempts to increase the performance of semiconductor devices radically, according to Frank Sewell, director of the semiconductor laboratory at Sperry Corp.

Speaking at a press briefing here last month on advanced computer technology, Sewell said leading-edge technology such as the development of Josephson junction and gallium arsenide devices possess outstanding potential for high-speed computers in both memory and logic functions.

Both are well suited to aerospace

and defense applications, Sewell added, with Josephson junction circuits in particular having far-reaching sensor applications. The experimental Josephson junction circuits function in supercooled environments where molecular activity is virtually nil.

The advantage of Josephson junction devices, he asserted, is that they are very fast switches that produce little heat when they operate. In addition, they can be fabricated with submicron geometry.

"With these properties, it will be possible to put millions of Josephson junction switches in a CPU volume only a few centimeters on a side without overheating the computer," he claimed.

The problem now with Josephson junction devices, Sewell added, is to develop materials that are stable, that can withstand repeated plunges into liquid helium, (as may be required for servicing), that can be deposited in layers only a few atomic layers thick and that perform with high speed, low power and low-leakage current.

To get around these problems, the scientist explained, Sperry has invented a process using the chemical element niobium, known as selective niobium anodization process (Snap). Sewell claimed the process in essence has allowed the company to develop Josephson integrated circuits that are rugged, fast, have good margins and manufacturing poten-

tial.

Turning to gallium arsenide devices, Sewell said their properties are particularly useful where there is an accelerating need for gigabit logic functions and microwave field effect transistors found in defense and aerospace data links, as well as in radar and signal processing systems.

Sewell claimed Sperry has developed a technique called the selective epitaxial planar (SEP) process for growing thick, isolated pockets of gallium arsenide devices surrounded by an insulator. "Using this technique, we can grow different types of epitaxial material in different places on the same chip, making possible fabrication of a variety of devices," he said.

Mead Data Bases To Be Accessed By IBM Micros

DAYTON, Ohio — Mead Data Central, a division of Mead Corp. has entered a joint marketing agreement with IBM to offer Mead data bases on selected IBM hardware.

Initially involved in the agreement will be the IBM Personal Computer, the IBM Displaywriter and the IBM 3101 terminal. According to Mead, the agreement is the first time its data base will be available on terminals other than those manufactured specifically for Mead's Lexis and Nexis services.

The joint agreement calls for the IBM and Mead marketing organizations to work together to place the necessary IBM hardware and Mead Data Central software to access the Mead data base. Marketing efforts under the agreement are slated to begin Sept. 1. The IBM hardware will be capable of gaining access to the Mead data base by the fourth quarter of 1983.

Mead Data Central can be reached at 9333 Springboro Pike, P.O. Box 933, Dayton, Ohio 45401.

Gould, Asahi Combine Forces In Chip Venture

ROLLING MEADOWS, Ill. — Gould, Inc.'s American Microsystems, Inc. (AMI) subsidiary and Asahi Chemical Industry Co. Ltd. have reached an agreement to establish a joint venture in Japan to produce integrated circuits.

The agreement calls for the construction of a facility in Japan for research, design, development, manufacture and sales of MOS very large-scale integration (VLSI) circuits for the Asian market.

Asahi will acquire 49% of AMI Japan, after which the two companies will establish a design center for application-specific circuits. Asahi will contribute one-half the initial capitalization, with AMI contributing the equivalent in design, gate array metalization and test technology. Specific investment figures were not disclosed.

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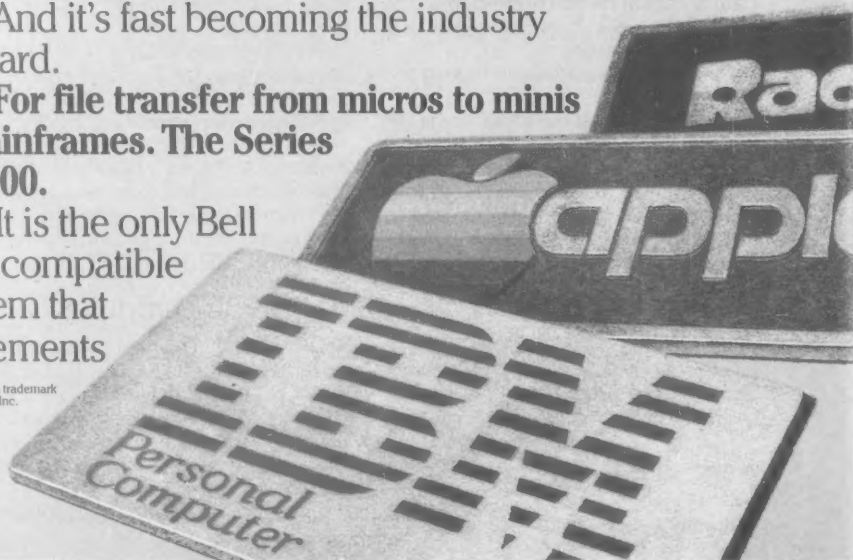
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And Use of Optical Fiber

N.E. Telephone Co. Expands Digital Switching

By Phil Hirsch

CW Washington Bureau

BOSTON — Within the next few years, New England Telephone Co. should be able to offer most of its business customers digital service end-to-end, the company's chief engineer indicated.

In a talk given here recently at the International Conference on Communications (ICC '83), a telecommunications conference sponsored by the Institute of Electrical and Electronics Engineers (IEEE), Chief Engineer C. William Anderson reported that "in 1979, about 20% of our customers were served by stored program control switches. This figure

has now increased to about half of our customers."

The advantages of digital switches are such that "I expect few, if any" analog switching machines will be acquired in the future, Anderson added.

New England Telephone is one of the 22 Bell operating companies scheduled to be divested by AT&T. Others digitizing at a rate like New England Telephone could diminish the market for bypass services.

Anderson said that "in 1979, there were less than 50 loop digital multiplex systems in the New England Telephone network. We now have 10 times that number installed, and we

[will soon be adding them at a pace approaching] 1,000 per year." Loop digital multiplex systems appear "so attractive," he added, that they will account for one of every two local loops added to the New England Telephone network by the mid-'80s.

Use of digital multiplexed local loops greatly simplifies the design and operation of services for large business customers, according to Anderson. "We can place remote multiplex terminals on the customer's premises and assign dedicated 1.5M bit/sec lines from these multiplexers to each distant destination."

Although this scheme works only for customers having large traffic

volumes, the loop's multiplexing arrangement allows it to be shared by several independent customers, he reported.

About 80% of New England Telephone's interoffice trunks are now digital, Anderson added, vs. two-thirds in '79. He also reported that the last four years have seen a significant use of optical fiber in the interoffice plant.

The company has begun building an optical fiber-based interoffice network that not only encompasses Boston and Cambridge, Mass., but is linked to the optical fiber intercity trunk being built by AT&T along the Eastern Seaboard. Laterals will be built "to each of our electronic trunk switching machines and to dozens of other central offices," Anderson said. He reported that the optical fiber links comprising the network operate at a maximum of 90M bit/sec/fiber, which is subdividable into 1,344 digital voice circuits, each operating at 64K bit/sec.

This year will be the last that New England Telephone "installs new copper interoffice cable capacity of any significant magnitude," Anderson said, adding that the company has begun using optical fiber in its local loop plant as well.

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Docutel/Olivetti, TRW Agreement Announced

DALLAS — Docutel/Olivetti Corp. has signed an agreement with TRW, Inc. by which TRW's Customer Service Division will provide maintenance for all Docutel products marketed directly by its Financial Systems Division.

TRW will also acquire a portion of the field maintenance operation of Docutel's Office Products Division, together with related assets.

The agreement supercedes a 1978 contract covering Docutel Series 2300 and previous model automated teller machines. Additionally, Docutel has reached an agreement for Applied Technology Ventures of Santa Ana, Calif., for the latter to acquire the remainder of Docutel's maintenance operations providing field service for equipment manufactured other than by Docutel or related companies.

Docutel said it would receive about \$13 million for the transfer of service operations to TRW and Applied Technology. The service operations, which currently employ about 600 people, had total revenues in 1982 of \$33.5 million, the company said.

Commenting on the announcements, B.J. Meredith, chairman and chief executive officer of Docutel, said the company will remain active in service support, retaining its components facilities and regional circuit board repair offices. He said the action followed a series of organizational changes in the division's marketing operations and represents "the logical result of our goal to realize maximum operating efficiency."

Study Predicts New Direction for COM Use

By Patricia Keefe
CW Staff

NATICK, Mass. — Today's computer output market is poised on the brink of "perhaps radical" change and is ready to take off in new directions.

But this change will not occur without "a hefty number" of casualties along the way, according to International Data Corp. (IDC) in a summary study of its 1982 Computer Output Program research efforts titled "1983 Computer Output Market: An Overview."

"The dramatic decline in the costs of both processing power and memory, even as both areas have improved technologically, has brought about

an equally dramatic change in the market for all products related to processing information with computers of any size," IDC said.

For example, the use of such peripherals as high-speed laser printers and computer output microfiche (COM) recorders has been almost exclusively the province of those sites with the most powerful computers available. Yet today, computer processing power of an extremely high order can be found on minicomputers, IDC found.

According to the report, COM equipment has fallen far short of the marketing expectations that heralded its arrival. But while today's market still sees an extremely heavy

reliance on paper output, there is a new generation of very young computer users who may be far more comfortable dealing with CRT or COM equipment as their "primary or sole source of output."

IDC predicts COM vendors may now begin to probe new markets due to several factors, including the increase in processing power in smaller systems, giving users of those systems the potential for generating enough output to make COM a viable solution to output requirements; increased processing power in the COM recorders themselves, allowing "convenience" and intelligent COM recorders to be introduced; and the availability of dry process equipment, which obviates the need for "plumbing" and allows the use of COM equipment in the computer room.

More specifically, the report found that the printer market was being driven hardest at the lowest end, fueled by a combination of lowered prices and a phenomenal in-

crease in desktop and personal computers.

While band printers are continuing to gain in popularity, IDC suggested the "death knell for impact drum printers may have been sounded last year when [Dataproducts, Inc.] announced that it would no longer accept orders for the 2200 series, a drum line printer." Nineteen-eighty-four is being touted as the year of the ink-jet printer, which the study said seems to be attempting a sort of renaissance. However, another contender for that title is said to be the coming generation of page printers that mimic most of the sophisticated electronic printing abilities and none of the prices of today's high-speed nonimpact printers.

IDC sees no serious threats to the COM equipment market before the '90s, predicting instead a future marriage between optical and present micrographics technologies.

Further information on the study is available from IDC, located at 5 Speen St., Framingham, Mass. 01701.

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Supershorts

Apple Computer, Inc. has announced plans to purchase 240 acres in Coyote Valley, south of San Jose, Calif., as a site for future headquarters.

3M has merged its Office Equipment and File Management Divisions into a single unit, Office Systems Division. The new division is responsible for the manufacture and marketing of copy machines, micrographics equipment, electronic typewriters, word processing systems and other office-related products and supplies.

Deloitte Haskins and Sells has just released a 104-page booklet, "Corporate Taxation in Europe." The booklet provides brief synopses of tax laws including a table of tax treaties between the U.S. and 16 European countries and a table of foreign currency equivalents. It is available from 28 State St., Boston, Mass. 02109.

Arthur Young & Co. is offering a brochure on how to write a new venture business plan. The brochure, titled "High Tech," is being offered in conjunction with the Southwest Venture Capital Conference and can be obtained from P.O. Box 599, Dallas, Texas 75221.

Stanford University Prof. John G. Linvill has been selected to receive the American Electronics Association's 1983 Medal of Achievement "for significant contributions to the advancement of electronics." Dr. Linvill is co-director of Stanford University's Center for Integrated Systems and a co-founder of Telesensory Systems, Inc.

Apple Computer, Inc. has awarded grants totaling \$206,000 to 35 community organizations nationwide to help establish information networks based on microcomputers.

Planning Research Corp. (PRC) has been awarded a \$2.2 million, 33-month contract by the U.S. Department of Agriculture's Food and Nutrition Services to develop and test an electronic funds transfer system for food stamp recipients. The system, which eliminates food stamp coupons, will be tested for nine months in Reading, Pa.

Sperry Corp. has announced plans to build a 175,000 sq-ft addition to its Albuquerque, N.M., facility. The firm expects to add an additional 300 jobs to its current work force of 1,000 over the next six months, according to a company spokesman.

Executive Corner

● **Kent Mueller** has been named senior vice-president of sales and marketing at Execucom Systems Corp.

● **Harry K. Frost** has been appointed vice-president of marketing for Quasitronics, Inc.

● **Bob Griffice** has been named vice-president and North American sales manager for Hogan Systems, Inc.

● **John H. Levergood** has been promoted to president and chief operating officer and named a director of Scientific-Atlanta, Inc.

● **C. Michael McKay** has joined Computer Sciences Corp. as vice-president of the Defense Systems Division.

● **David L. Robichaud** has been appointed vice-president of operations at Amnet, Inc.

● **Donald F. O'Neill** has been named vice-president of operations and **Ronald O. Murr**, vice-president of engineering, at Southern Systems, Inc.

But Avoid Overstatement

Security Program Necessary for Exec Protection

By Bill Laberis
CW Staff

There is a host of basic security measures every large corporation should follow to protect its top-level executives from extortionists and terrorists.

But those in charge of developing a security plan must be careful "not to overstate the situation and create a bunch of paranoids out of the top executives," a security consultant warned recently. The warning was issued on the heels of an attempted \$1.25 million extortion scheme in which Kenneth Olsen was the target of letters threatening his life [CW, July 4].

Joseph Malley, director of man-

agement consulting at Burns International Security Services, Inc., said corporations should have in place a definitive executive protection program to protect executives at work, at home and especially on the road.

The program, he said, should include contingencies that anticipate worst case situations. Among other things, Malley suggested that corporations develop a crisis management team to deal with the possible extortion, kidnapping or death of ranking executives.

For protection on a daily basis, Malley outlined a list of essential measures to be considered in framing a corporate protection program:

- At work, the executive suite

should be accessible to as few people as possible. It should be separated from the office mainstream by physical barriers such as reinforced doors, high partitions or guarded desks. Bullet-proof glass is also recommended, depending on its exposure and proximity to the ground.

- Executive protection extends to the home, which should be equipped with sophisticated burglar and fire alarms, both wired to local authorities when possible.

- The greatest danger exists on the road, both to and from work and when traveling domestically or abroad, Malley said. Executives can

minimize threats traveling between home and work by occasionally varying their routes.

- Any and all threats received should be immediately reported to authorities, Malley warned.

- Traveling abroad exposes executives to international terrorist groups. Further, Malley said, police protection in certain countries "is almost worthless," and, therefore, executives should be especially certain to follow a carefully planned itinerary. The U.S. State Department and the Federal Bureau of Investigation both publish guidelines for executive travel abroad.

Floppy Disk Entries Raise Concerns for Micro Shoppers

By Robert R. Jurick
Special to CW

With promises of becoming a de facto standard, the plethora of new floppy disk products announced and displayed in recent months has raised concerns for those shopping for a workstation or microcomputer. Will there be standards? Does one risk obsolescence in choosing a particular product or a brand?

Floppies are eight inches in size, whereas minifloppies are 5 1/4 inches, like the ones Control Data Corp. supplies to IBM for its Personal Computer. Most record at 48 or 96 tracks per inch. Reportedly Amlyn Corp., Remex division of Ex-Cell-O Corp., Shugart Corp., and Micro Peripherals, Inc. are formally exchanging high-capacity 170 track/in. technology to set a standard, getting there via bimodal (having the ability to read old disks) options. Minifloppies will peak their market share at 60% before losing ground later this decade to microfloppies.

Microfloppies are smaller than 5 1/4 inches. Their acceptance has snags: no standard, little media available and competition from half-height minifloppies. Nonetheless, their size is important, and there will be more microfloppies than floppies and minifloppies, combined, in a few years. Here is where the forces are competing fiercely for that elusive de facto standard.

Interface standards are electrical connections between the disk and the computer. Hardware vendors are pretty much in agreement here. Media standards are basically size, density and jacket type. Size is hotly debated, with 3-in., 3 1/4-in., 3 1/2-in. and 3.9-in. most popular. Densities range from 48 to 135 track/in. Jackets can be rigid or flexible.

Forces struggling to set the standards are hardware vendors, media vendors and the American National Standards Institute.

Sony Corp., which originated the 3 1/2-in. disk two years ago, Shugart, Tandon Magnetics Corp. and possibly Hitachi Ltd., Matsushita Industrial Electric Corp. Ltd. and Mitsubishi Ltd. will support a 3 1/2-in. standard, recommended by the Microfloppy

Standards Committee.

Other U.S. companies, such as Hewlett-Packard Co., CDC and the media vendors also support the 3 1/2-in. standard now that the incompatibilities between the U.S. format and the Sony format have been resolved by the committee. Hitachi and other vendors in a kind of Japanese consortium excluding Sony support the 3-in. standard, along with three U.S. firms.

Tabor Corp. introduced a 3 1/4-in. format, Seagate Technology Corp. switched endorsement from the Sony 3 1/4-in. format to Tabor, and media manufacturers Brown Disk, Inc., BASF, and 3M Corp. joined Seagate in committing to build 3 1/4-in. media.

Vendor Agreement Unlikely

IBM offers a 3.9-in. version to the OEM market. If IBM puts it into its own products, IBM would not have add-on competition for some time. Thus, vendor agreement on a standard does not appear likely in the near future.

Are high-density microfloppies next? Ten other media companies aligned with Sony and Shugart in February, announcing their support of the standard of 3 1/4-in., 80 tracks, 135 track/in.

Ansi has tried hard to coordinate standardization, but can only recommend and persuade, as it did recently, to get Sony to redesign an existing 70-track, 3 1/4-in. drive to 80 tracks. Although the leading contender before Ansi is the 3 1/2-in. format, the 3-in. version format will probably be endorsed by the Japan Industrial Standards Committee.

For the most part, hardware vendors have not cooperated with Ansi, as in January when only seven firms attended the meeting of the Ansi X3B8 subcommittee on microfloppy standards. The noncooperative factions are in such disagreement that the committee in May threw in the towel and asked its parent committee for permission to begin documenting proposals submitted by the four strongest factions. Ansi apparently will not choose a standard until market share tells which standard is the one.

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To Assist Industry in Five-Year Program Britain to Fund Half of Its Fifth-Generation R&D

By Rex Malik
Special to CW

LONDON — The British government is to fund half the cost of an advanced collaborative basic research program by British industry, universities and government laboratories into the technology of what has now become known as the fifth generation.

The government will provide up to \$240 million for such basic research by industry on a 50% grant basis. The original proposals had been for 90% grants, but these were rejected by a cabinet committee presided over by Prime Minister Margaret Thatcher.

Of this funding, about \$175 million will come from the Department of Industry (DOI) in "new" money, new in that any DOI-funded research that bears on the fifth generation already being carried out will be excluded from the budget.

Some \$50 million to \$65 million will come from the Ministry of Defense (MOD). This is but a small drop in the MOD's budget; the MOD currently spends over \$2.5 billion annually on research and development, at least \$500 million of it on research.

The government will also provide \$75 million to \$80 million on a 100% funding basis for research in universities.

The program is to last five years, and total expenditure — both gov-

ernment and private — is expected to be \$550 million to \$560 million. Development has been excluded, though this may also be the subject of support under existing programs.

Tight Lipped

Making the announcement to Parliament, the Secretary of State for Industry, Patrick Jenkin, stated: "We will require clear and categorical assurances that the work done here does not leak overseas to benefit Britain's competitors."

It is unlikely that any foreign-owned multinational, primarily in the U.S., could give such assurances, particularly one such as IBM with integrated product lines and internationally dispersed manufacturing.

The case of Japan is, however, very different. Its electronics and computing companies are primarily Japan-based, the foreign subsidiaries are totally under control and only manufacture what is given to them. They have no form of product independence.

The British government is giving considerable attention to the rules of intellectual property, which will tie those taking part to restricting the results of the research program. They will not be tied entirely. The research results will be able to be sold under a quid pro quo basis.

That creates the possibility of being able to hatch deals with Japan.

The Japanese offer seeking collaboration with Britain on the development of the fifth generation has still not been answered, though it was initially made over 15 months ago.

It has not been answered primarily because there were no institutional mechanisms available to make basic research material exchangeable.

The British fifth-generation program should create them. The program is to be run by a central directorate out of the DOI, headed by Brian Oakley, secretary of the Science and Engineering Research Council, the government's main R&D funding agency for universities and for much of the research done in its own laboratories.

He will be supported by four deputy directors, each covering one of the four areas into which the program is split.

The research program is to be overseen by a supervisory board headed by Sir Robert Telford, chairman of Marconi Ltd. Marconi is Britain's main defense electronics and radar manufacturer and is a subsidiary of GEC Ltd., Britain's largest electrical and electronics engineering manufacturer.

At the technology research level, Britain's fifth-generation research program is to be on the lines recommended by the Alvey Committee, which reported to the government last autumn.

The committee, headed by British Telecoms — the UK equivalent of AT&T — technical director John Alvey, recommended funding research in four areas, including:

- Software engineering, in which key among the Alvey recommendations was the development of the tools to create software factories. The British software industry is very fragmented and not getting as much leverage from the total investment in software as it might otherwise.

- Man-machine interface, concentrating on dialogue design, I/O modes, human/system cognitive compatibility and human-to-system expertise transfer. Alvey noted that the British work in these areas lacks a coherent thrust.

- Intelligent, knowledge-based systems, involving the use of inference to apply knowledge to perform a task. Much of the work here is to be funded by the Department of Education as the first need is to increase the size of the R&D community in this area.

- Very large-scale integration, where the goal is to give the UK secure access to very large-scale integration technology. Much of the Alvey concentration was on the tools to enable the management of design complexity and computer-aided design tools.

Malik is a free-lance computer journalist based in London.

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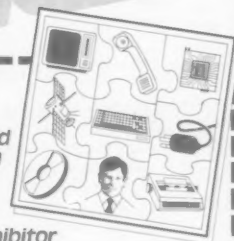
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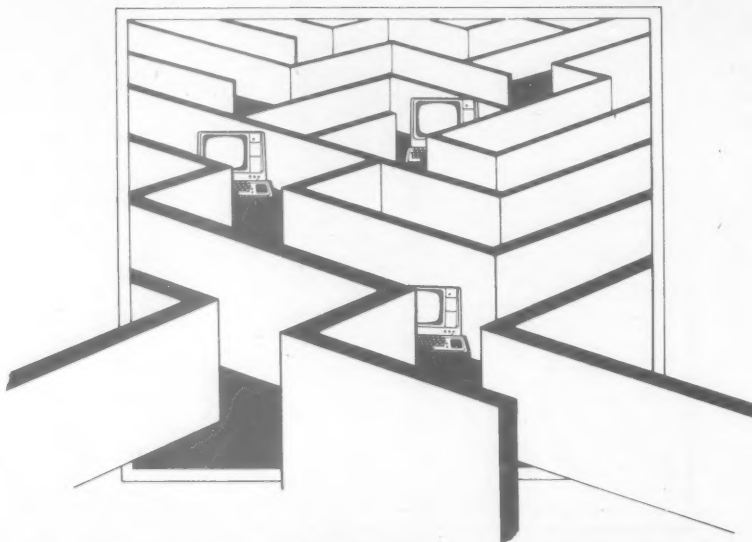


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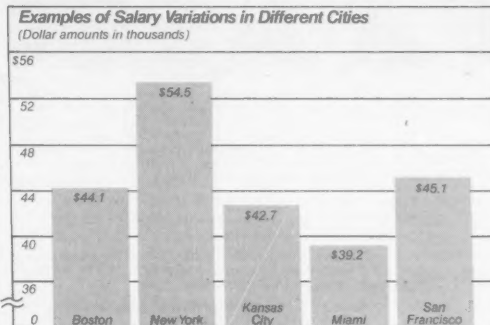


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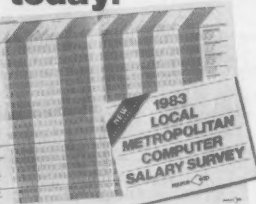
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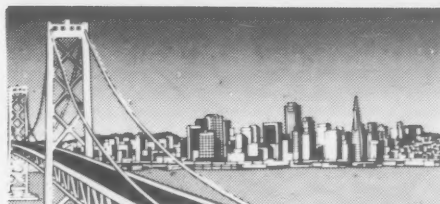
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General Manager
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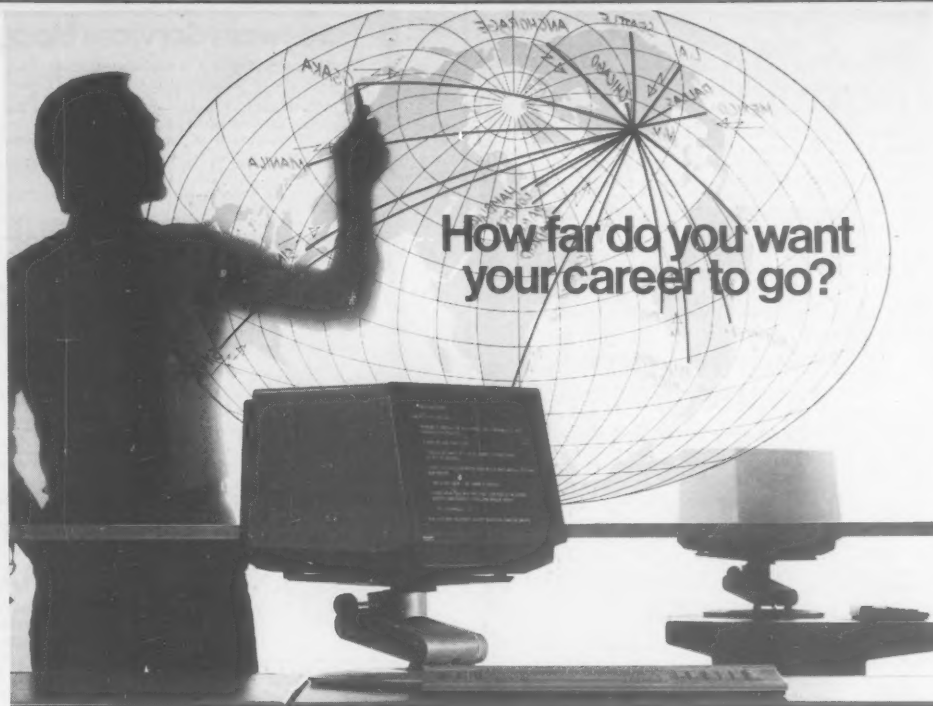
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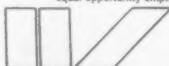
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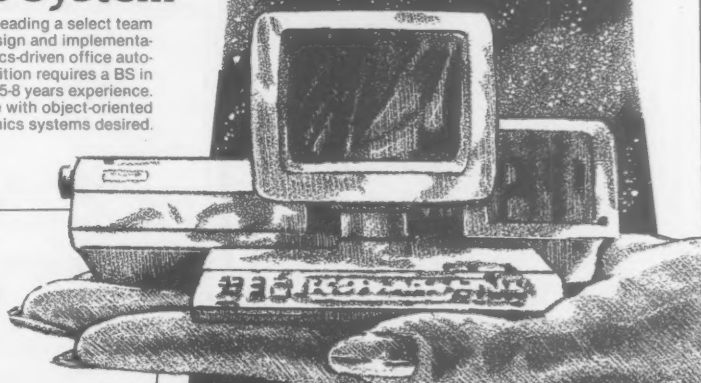
Qualified candidates who plan to attend Siggraph '83 in Detroit are invited to send a resume to the address below to set up an interview at the show — or stop by to talk to our staff at our Hospitality Suite.

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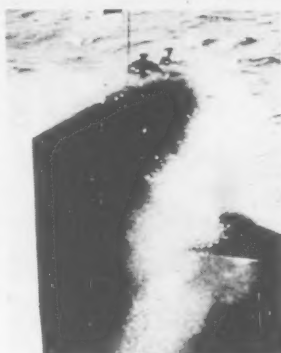
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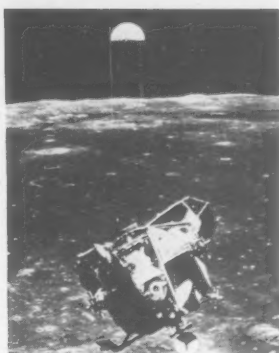
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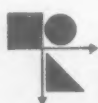
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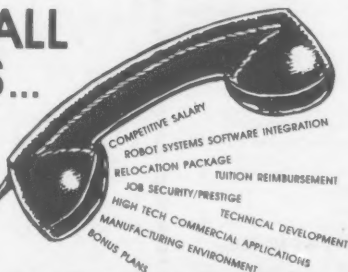
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If you want to be at the forefront of technology, then you belong at Bechtel, a world leader in the engineering and construction industry. We have an immediate opening for a Senior Performance Analyst who will be responsible for performance measurement of systems and subsystems (IBM 3033, 3083); data reduction and analysis (RMF, SMF, SAS and CICS/SPARS); data storage and retrieval analysis; software monitor development and use; and equipment analysis and configuration design.

The successful candidate will possess an in-depth understanding of performance tools and methodologies; practical experience with software monitors (hardware monitor experience is desirable); MVS systems programming experience; IBM hardware specifications, modeling.

For confidential consideration, please send your resume to:

Pat Mabutas
Bechtel
Employment Department 46C-9
P.O. Box 3965
San Francisco, CA 94119



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Southeast Bank



With total assets exceeding \$8 billion, Southeast Bank remains at the forefront of Florida banking. Our state-of-the-art environment includes an IBM 3033 and 3081 with MVS, CICS, JES 2 and a network of over 3,000 terminals. We currently have an outstanding career opportunity for an experienced:

OPERATIONS SHIFT MANAGER

Responsibilities will include supervision of approximately 50 employees in the following areas: Data Entry, Data Control, Computer Operations, Network Operations and Operations Technical Support. Qualified candidates must have demonstrated operations management expertise in a similar IBM-MVS environment and strong interpersonal skills. Candidates must be willing to work 2nd or 3rd shift.

Southeast offers a complete company paid relocation package, excellent compensation and benefits which includes shift differential and tremendous growth opportunities in one of the area's most dynamic Data Centers. Please call (305) 326-5200 or send resume and salary history in confidence to: Angela Smith, Employment Manager, SOUTHEAST BANK, N.A., 1001 N.W. 7th Street, Miami, Florida 33136.

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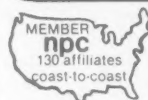
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And if New England's not your cup of tea, we offer openings across the country through our affiliation with National Personnel Consultants (NPC). Naturally companies pay all fees, interview and relocation expenses.

Send resume or call Mitch Price toll free: 1-800-628-3374. In Massachusetts call (collect) 413-781-0982.



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Spearhead DB package training, design and standards for a large programming and user staff. Maintain data dictionary and supervise DB designers and dictionary specialists.

We are searching for someone with a Bachelor's Degree in Math, Business, Acct., Mgt. or Computer Science or closely related discipline, plus 6 years related DB experience.

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Senior Analyst working on data base design, maintenance, performance, security, integrity, recovery, and supporting diversified applications. Competitive salary ranging from mid \$20's to \$30's depending upon expertise. Beautiful suburban location surrounded by parks. Free parking. Our environment includes: shared IBM 3081, 3032, and 4341 computers under VM/SP; MVS/SP; JES2; twin PDP 11/70's under RSX-11M; TP network serving over 750 remote users via ACF/NCP, ACF/VTAM, CICS/VS and RJE; system 2000 and IDMS Data Bases using DC/URF, ADS/O, OLM, DDS, and IDO.

The minimum requirements for this position are: 2 years college (degree preferred), 3 years programming experience, 1 of which as a Data Base Analyst in IDMS or similar environment. Send resume to:

Carl Beck Truiger
Re: Data Base Analyst
Office of Computer Services
5880 SW 87th Avenue
Miami, FL 33173
(305) 596-8204
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SYSTEMS ANALYSTS
AND PROGRAMMERS
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Job dissatisfaction, complacency, and frustration are the biggest obstacles to overcome to achieve one's career goals. Every day new career opportunities pass us by because we are unaware of their existence. Let us keep you abreast of what your true value is in the market place. Absolutely no obligations, please call or write Keith Reiche, CPC, Data Processing Specialist.

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UNIVAC MAPPER ADMINISTRATOR

We are just beginning to use Mapper and need Data Processing professionals with Mapper experience.

You will design runs, train application development staff, interact with users to assist with technical questions relating to Mapper systems. Minimum 1 year experience with designing Mapper runs is required.

The Data Processing Department and Nike are both in a dynamic growth environment. Please submit your resume complete with salary history to:

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WASHINGTON, D.C.
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Programmers, TANDEM

Exceptional opportunities at various levels of experience for individuals to work on the specification, design, development and implementation of applications systems. Positions involve analysis of user requirements and documentation. Experience with TANDEM 16 or equivalent will be essential. Respond to Joan Cusack / NASD / 1735 K Street N.W. / Washington, D.C. 20004 / (202) 728-8125.

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Systems Analysts

Strong analysis and planning skills are essential for these positions involving conceptual planning and design of medium/large scale systems. Strong emphasis on defining user requirements as they relate to the securities/trading marketplace. Responsibilities include preparing functional requirement documents, monitoring trends in the field and working closely with other industry systems/automation professionals. At least one year of systems analysis or three years securities industry experience and strong verbal/written communications skills a must. On-line systems background preferred. Respond to: Nancy Costa / NASD / Two World Trade Center / South Tower-98th Floor / New York, NY 10048 / (212) 839-6232.

TRUMBULL, CT

Systems Analysts—
Programmers, Operations

Experience the challenge of our national computer center and the suburban lifestyle of Fairfield County. These positions require a minimum of two years prior experience involving the analysis, design and implementation of programs and systems using UNIVAC (MASM) and TANDEM (TAL) programming languages. Respond to: Stan Muzyk / NASD-NASDAQ / 80 Merritt Blvd. / Trumbull, CT 06611 / (203) 385-4550.

SYSTEMS PROGRAMMER

The COMSAT Computer Center has an immediate need for a systems programmer to help support its extensive teleprocessing network on IBM 3032 and 4341 systems.

We offer a small group environment where individual contribution can be recognized and the opportunity to work with a diverse mix of teleprocessing software on VM and MVS systems. Duties of the position include planning, installation, modification and support of teleprocessing and operating systems, including tuning, problem diagnosis and resolution.

Candidates must have a BS/MS degree preferably in Computer Science, Mathematics, Engineering or Physical Science and experience in teleprocessing software installation and network support, especially VTAM, NCP, NCCF and NPDA. Additional experience in any of the following areas would be a plus:

- MVS or VM operating system generation, maintenance and modification;
- TSO or CMS usage, system modification and user support;
- CICS/IMS installation and application support.

Join the COMSAT team for rewarding professional employment that offers excellent salary and benefits including continuing education, medical, dental and life insurance, retirement and stock plans, etc.

Please call (301) 428-4222 for an application, or send resume, including salary history and requirements, to Dept. CW-7.



COMSAT

COMSAT LABORATORIES
22300 Comsat Drive
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(25 minutes from Washington, D.C.)

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EDP PROFESSIONALS

We have been retained by a midwest transportation company to find highly qualified personnel to support its' growing MIS needs. Current environment includes Dual IBM 370 Compatible CPU's operating in a DOS environment supporting a large TP network. Plans include significant on-line systems development and data base technology. The following positions are open for experienced applicants possessing the qualifications specified.

- Systems and Programming Manager: 4-6 years project management experience developing on-line systems and IBM 370 type environment.
- Senior Systems Programmer: 4-6 years experience generating/maintaining DOS/VSE in a multi-CPU IBM 370 type environment.
- Senior TP Systems Programmer: 4-6 years experience maintaining TP monitors (preferably CICS) and front-end communications processors in a large TP environment.

Offered are excellent compensation/benefits and a growth environment. Submit resumes in confidence identifying position applying for, providing salary data.

Reply to CW-B4201
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We have specialized in data processing professional placement in Maine for almost a fifth of a century. If you qualify for positions in the \$25-40,000 range, please contact us in total confidence. Our clients pay our fees and provide relocation assistance.

ROMAC

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Portland, Maine 04101
(207) 773-4749

REAL-TIME
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Harris Controls/Composition Division is a world leader in the development and delivery of real-time process control systems for Utilities/Pipelines and Newspaper Text Processing Systems throughout the international markets.

Working from generalized customer requirements, within a team concept, you will be involved in performing a total software engineering task. Your responsibilities will involve design, documentation and implementation of real-time systems and furnishing technical direction and consultation to customers and in-house staff. Our environment is a network of real-time redundant minicomputers in a distributed processing application utilizing FORTRAN, Assembly, UNIX, and/or "C" languages.

Immediate openings are available involving: Customer Support Application, Applications Software Development, Communications (high speed parallel data links and Interprocessor Interrupts), Operating Systems (RTOS & PPOS) and our DAC, MMI or Data Base Teams.

We are a division of the Harris Corporation, Florida's largest industrial employer with over 9,000 Florida based employees and corporate sales in excess of \$1.6 billion. We are located in Melbourne, a Florida east coast resort area, where you will earn nationally competitive income while paying no state or local income taxes—and enjoy the generally lower cost of Florida living.

Send your resume to Donald C. Quirk, Harris Corporation, Controls/Composition Division, P.O. Box 430, Melbourne, Florida 32901.



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G C Services Corp. has positions available for full time Project Managers to coordinate a data processing contract. The Project Manager shall be located in one of the cities denoted on our map and shall act as the top official representing G C Services Corp. to our client.

The Project Manager shall have control of and be responsible for the installation of IBM 4300 hardware and DOS/VSE software, implementation of an online data base computer system with an integrated telephone switch and the on-going support of this environment.

The Project Manager shall be skilled in technical and managerial abilities, a four-year college degree is highly desirable, must have experience and knowledge in COBOL programming, systems design, and in the installation of large systems, and shall have experience as a manager of technical people. We offer an attractive compensation and benefits program. Send confidential resume and salary history to:



G C SERVICES CORP.
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DEPT. HOU: HGO: CPW: DGL
P.O. BOX 2667,
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SYSTEM ANALYST/DATA PROCESSING COORDINATOR

The System Analyst/Data Processing Coordinator will coordinate all phases of the school district's student records. This will be a user-oriented program encompassing 30 schools with an enrollment of 12,000 students and will require a high degree of communications skills in terms of user coordination and training. Position will maintain a close working relationship with the Director of Data Processing in evaluating, enhancing and revising programs as necessary.

REQUIRED QUALIFICATIONS

- At least an Associate Degree in Data Processing, Business or Accounting or experience equivalent.
- No less than five years of recent data processing experience to include system analyst background.
- Experience with IBM 370 products.
- High user exposure to include demonstrable coordination and communication skills.

DESIRABLE

- Programming background in COBOL and familiarity with CICS.
- Project leader implementing users' systems.
- Networking experience.
- Public school background to include attendance reporting, scheduling, grade reports, student records and public transportation.

SALARY to \$40,000 depending upon qualifications and experience.



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(907) 452-2000

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DATA PROCESSING PROFESSIONALS

ASCI Corporation headquartered in Metropolitan Kansas City area is a leader in software development conversions and programming support. Our continued growth has created additional opportunities in the southeast, midwest and southwest for professionals with state-of-the-art skills in programming and systems design. Qualified candidates should possess related experience in the data processing field and a proven background in one or more of the following technical areas:

CICS (Command and/or Macro Level) IMS DB and/or DC-IMS DB and/or DC-Model 204-IBM 3600/4700/8100-ACP-PARS-Assembler-COBOL-FOCUS-PL1.

Data Base Analyst, Systems Programmers, Project Leaders, Systems/Programmer Analyst and Programmers are needed to fill current and new requirements.

We offer competitive salaries and comprehensive benefits program including PAID OVER-TIME. If you have been searching for a growth opportunity with a dynamic and progressive company that "puts people first", then ASCI is your answer. For immediate consideration send your resume and salary history in confidence to:

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This is a ground-floor opportunity in a new department developing software and hardware to support testing of state-of-the-art aircraft in the wind tunnels at NASA's Langley Research Center, Hampton, Virginia.

If you are seeking a technical challenge and a location that offers a mild climate and extensive recreational attractions, contact L. Stewart at (804) 865-0000 or send resume to: WYLE LABORATORIES, 3200 Magruder Boulevard, Hampton, VA 23666.

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Sr. Programmer/
Analyst

PL/1, DL-1, CICS Proficiency

Major division of the A.C. Nielsen Company, located along the foothills of Colorado, is seeking individuals with demonstrated competence in PL/1, DL-1 and command level CICS for major development projects.

If you meet this criteria and wish to expand your technical skills, we will interview you at our expense. We offer a marvelous location and challenging work in a technically exciting environment: IBM 3081K, MVS/XA, IMS, over 50 GIGA Bytes of on-line storage and an international data communication network.

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Shirley Chambliss
Director of Personnel



Neodata Services

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COMPUTER PROFESSIONALS

Beverly Enterprises, a leader in the health care industry, currently has immediate openings in our computer support center located in Virginia Beach, Virginia for:

Systems Analysts

Systems Analyst with project team responsibility experience. Motivated toward the user and experienced in the health care industry. Specific application areas to include financial, general ledger, accounts receivable, and medicare/medicaid reimbursement. Experience with medium to large IBM OS/MVS/CICS COBOL Applications Systems and on-line interactive systems. Experienced in systems exception testing conversion activities.

Programmer/Analysts

Currently, a Senior Programmer or Programmer Analyst with 2 1/2 to 4 years experience with medium to large Batch Interactive Financial Applications System exposure. IBM OS/MVS/CICS/TSO experience required.

Beverly Enterprises pays competitive salaries and offers expanded benefits program to include reimbursement for relocation expenses. Please send current resume, salary requirements, and contact address and phone number to:

Personnel Manager
Beverly Enterprises
Information Services Division
101 North Lynnhaven Rd., Ste. 301
Virginia Beach, VA 23452
(804) 340-2477

EOE/M/F

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Full-time, 2-semester, tenure track, Coastline Community College, Fountain Valley, CA. In-depth knowledge microprocessor/computer repair career opportunities. Prefer recent technical & teaching experience in computer repair technician training. For application contact: Coast Community Colleges, 1370 Adams Ave., Costa Mesa, CA 92626, (714) 556-5947, & submit by 4:30 pm August 5. EOE M/F/H.

HP 1000 JOB OPPORTUNITY

We want someone with experience on the HP1000 to join our staff as Project Leader. This position involves working with programmer/analysts and programmers to design and implement real-time software systems for data acquisition and process control applications. Contact with customers and some travel will be necessary to develop system requirements, install software, and provide training. Take this step up to a software company in the Rocky Mountain Area. Send your resume to: Aurelian Corporation, P.O. Box 1265, Laramie, Wyoming 82070, (phone 307-745-8831). We intend to hire by September with a starting salary of \$35K or higher. Equal Opportunity Employer.

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MANAGER- INFORMATION CENTER

We seek an energetic information systems professional to take charge of a leading, innovative and highly successful Information Center.

You will orchestrate the operational and strategic activities of an expanding staff of seven people. Major responsibilities are directed at enhancing end-user-computing through the use of:

- Personal Computers
- User-friendly mainframe software

The self-starter we seek must have good communication skills and the ability to relate to people and their information requirements. Additionally, a visionary MIS spirit while exploiting today's information tools is essential. Previous Information Center experience is desired.

As a unit of United Technologies, a Fortune 50 Corporation, we are a large, multi-national manufacturing organization, headquartered in Northeastern Indiana, producing and distributing electrical products to a variety of industrial and consumer markets.

We are committed to a progressive program of information resource management. The Information Center is a critical element of this objective.

An attractive salary with excellent corporate benefits are offered.

If you feel that you can measure up to these requirements and are looking for a unique information system challenge, please send a detailed resume with salary progression to: **Personnel Manager, United Technologies Essex Group, P.O. Box 1601, Fort Wayne, Indiana 46801.**



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Ms. Karen Brown
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Immediate opening for an experienced software professional in a large IBM installation. If you would enjoy living in a scenic western Maryland community, then consider discussing a career opportunity with us.

System environment includes: IBM 3033 12 Meg running MVS/SP3, IMS 1.1.6, ACFTVAM, ACF/INCP, SAS, SAS/GRAPH, ROSCOE, etc.

Minimum qualifications include:

- 3-5 years of systems support experience
- Knowledge of Sysgens
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Salary commensurate with experience plus and outstanding benefits package. Send resume and salary requirements in confidence to:

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California based IBM 3270 manufacturer is seeking a senior professional with a proven national sales/management track record and strong IBM 3270 experience. (3270 background a must). Salary, commission and benefits will be tailored for the right candidate. Send resume and salary history to:

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Computer Systems Analyst to develop and instruct in the use of computerized accounting systems. Analyze and develop use of software packages, for inventory control, accounts receivable, accounts payable, costs analysis, projection forecasts, and other accounting procedures. Install and test systems developed. Bachelor's Degree in Information Systems with background in accounting by training, education or experience required. \$19.50 per hour for 40-hour week, \$14.25 per hour overtime. Send resumes to Michigan Employment Security Commission, Room 415, 7310 Woodward, Detroit, Michigan 48226. Reference No. 19883. Ad paid by employer.

COMPUTER SCIENCE FACULTY

Assistant Professor to teach lower and upper division computer science courses in a rapidly expanding Computer Science/Information Systems program. Start August 15. PhD in Computer Science or closely related field desired—MS in Computer Science considered. Knowledge of Architecture/Operating Systems necessary; experience on VAX/VMS system helpful. Send vita, graduate transcripts, and two letters of recommendation by July 6 to Dr. Joseph Tomasovic, Department of Mathematics/Computer Science, College Misericordia, Dallas, PA 18612.

PROJECT LEADER—In charge team of programmers & analysts respon. for design, dvpmnt. & implemt. of computer systems invlving int'l banking. Consults w/mngt. & prog. persnl. to clarify prog. intent. Div. up prog. assignments. Anal. test runs & directs any nec. corrections. Also reviews prog. to increase efficiency & conserve storage space. 5 yrs exp. or 5 yrs in programming. B.Sc. in Computer Science or Math. Must have knowledge of COBOL, ASSEMBLER, CICS, IMS, YOURDON. \$45,000 p.a. to work 35 hrs/5 days/wk. PLS SEND RESUMES ACSIS, Inc., 90 John St., NY, NY 10038.

MICROCOMPUTER

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Wadsworth Electronic Publishing Company is a rapidly growing leader in the microcomputer software industry. We have an immediate opening for a Product Manager to handle our top-of-the-line comprehensive statistics and graphics package. Duties will include: Supervision of on-going development of the package and all derivative products; coordination of conversions to new hardware, extensions and enhancements; planning of new capabilities; development of user support and communications material; and extensive interaction with the marketing department.

Applicants should have extensive experience with microcomputer and mainframe statistical and graphics software, a sound understanding of the microcomputer hardware and software industry, first-hand experience with software design and implementation, and strong background in statistics and graphics. Outstanding organizational and communication skills are essential, and working knowledge of PASCAL and the UCSD-p operating system will be a definite advantage.

As a member of one of the world's largest information organizations, we offer excellent compensation and fringe benefits. To learn more about this exceptional career opportunity, send your resume and salary requirements to:

Department 54
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The open line rate is \$8.05 per line and there is a minimum size of 1 column by 2" at a cost of \$225.40. We can accommodate up to 5 columns and depth measurement increases by half inch increments.

Ads may be mailed in, cleanly typewritten, with a letter stating the size desired and the issue in which it is to be run. Our team of adtakers will take ads that require no artwork or borders over the phone. We also provide telecopier service.

Any borders, logos, or artwork should be sent in with your ad and must be dark and clear enough to be reproduced.

Computerworld comes out every Monday and our deadline for receiving ads is 10 days (or six working days) prior to the issue date desired.

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A fast growing airline of the Region has a modernized Data Processing Department which is equipped with:

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- Prime 750 x 2
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A team of 40 system development staff is engaged in maintenance and development of some of the large as well as small online systems in the functional areas of Reservations, Revenue Accounting, Stock Control, Finance and Commercial.

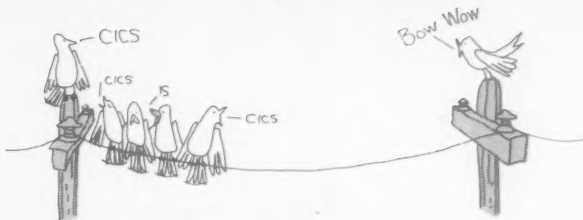
Applications are required for the following positions for immediate recruitment. Starting Salary is negotiable depending on candidate's qualifications and experience. Earnings are tax-free and company provides furnished accommodations plus perks.

1. System Development Managers - \$30,000 - 40,000.
The responsibilities are to liaise with the management, establish DP growth directions within the company and manage system development resources. The applications must have airline experience in a similar position.
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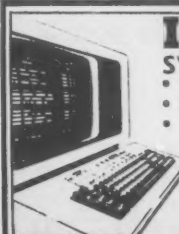
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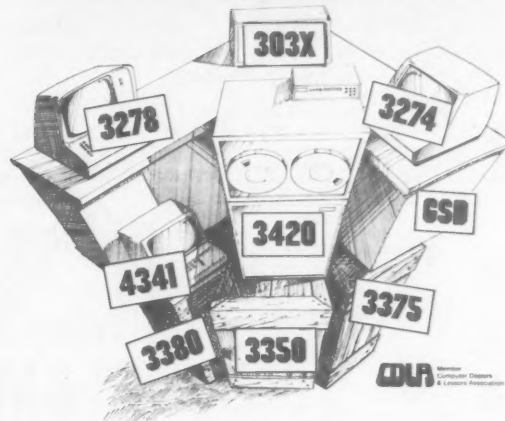
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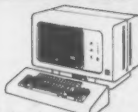
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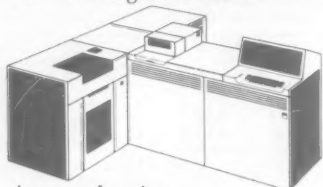
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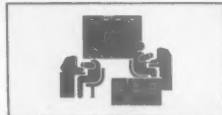


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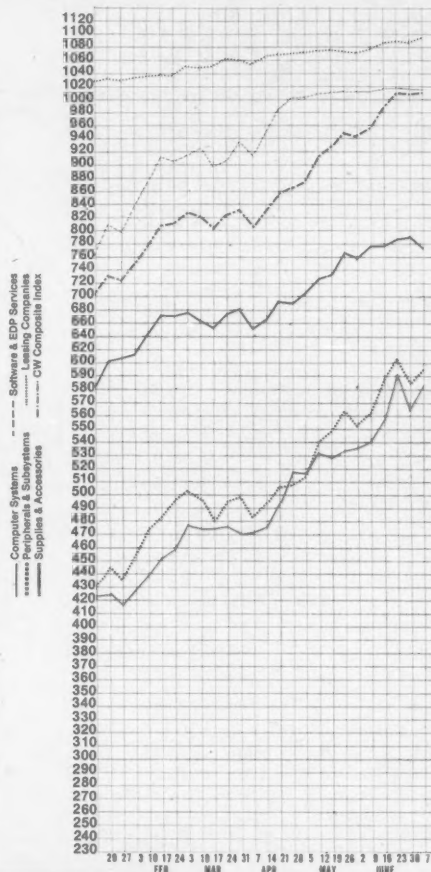
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CLOSING PRICES WEDNESDAY, JULY 6, 1983

All statistics compiled,
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E X C H	SYMBOL	PRICE					E X C H	SYMBOL	PRICE					E X C H	SYMBOL	PRICE				
		RANGE	1982-83	CLOSE	WEEK	WEEK			RANGE	1982-83	CLOSE	WEEK	WEEK			RANGE	1982-83	CLOSE	WEEK	WEEK
		(1)			CHG	PCT			(1)			CHG	PCT			(1)			CHG	PCT
COMPUTER SYSTEMS																				
A	ANDAL CORP	8-30	28 5/8	+1/4	+0.8		O	ADVANCED COMP TECH	1-8	7 1/2	-1/2	-8.2		E	COMPUTER DEVICES INC	4-21	11 3/4	-1/2	-4.0	
N	BURROUGHS CORP	28-38	34 1/2	-1 1/8	-2.0		O	ADVANCED SYSTEMS INC	9-30	30 1/4	0	0.0		O	COMPUTER TRANSCIVER	4-12	8 3/4	+1/4	+2.9	
O	COMPUTER AUTOMATION	7-17	14 3/4	+3/4	+4.8		O	ASS COMPUSYS INC	7-28	23 3/4	-1 1/8	-4.1		N	COMPUTERVISION CORP	19-53	48 5/8	+7/8	+1.8	
A	COMPUTER CONSOLES	8-24	23 7/8	+7/8	+3.8		O	AMERICAN SOFTWARE	22-31	29 1/4	+1 1/8	+4.4		N	CONSIG CORP	17-38	22 1/8	-5/8	-2.7	
N	CONTROL DATA CORP	21-62	58 7/8	+2 1/8	+3.7		N	ANACORP INC	8-23	17	+7/8	+4.8		A	DATA ACCESS SYSTEMS	1-4	1	0	0.0	
N	CRAY RESEARCH INC	20-32	49	-3 1/4	-6.2		O	ANALYSTS INTL CORP	5-20	15 1/4	-1	-6.1		O	DATA PROCESSING	18-41	25 3/8	+1 1/8	+3.9	
N	DATA GENERAL CORP	20-73	57 5/8	+1/2	+0.8		A	APPLIED DATA RES.	8-27	34 5/8	-1/8	-0.3		O	DATUM INC	2-17	14 3/8	-1/2	-3.3	
N	DATAPoint CORP	11-38	20 1/2	+1/4	+1.2		O	ASK COMPUTER SYSTEMS	1-7	3 1/2	+1/4	+4.7		N	DATA JARVIS CARPLY	2-7	3 1/8	-1/8	-0.9	
N	DIGITAL EQUIPMENT	62-132	118 1/8	-1/2	-0.4		B	ASTRADYNE CORP IND	1-7	3 1/2	+1/4	+4.7		O	DECISION DATA CORP	3-16	12	-1/8	-0.8	
A	SECO INC	8-15	14 1/8	+3/8	+2.7		N	AUTOMATIC DATA PROC	21-44	42 5/8	+1 1/8	+2.7		O	DELTA DATA SYSTEMS	1-4	2 3/4	-1/8	-4.3	
N	ELECTRONIC ASSOC.	5-15	12 1/4	-1/2	-3.8		O	CSA COMPUTER ASSOC	5-15	12	+1/4	+1.9		N	ELECTRONIC N H	18-50	45	+3 1/2	+8.4	
N	FLOPPING POINT SYST	18-44	40	-1/2	-1.2		O	COMPUTER ASSOC INT'L	6-35	32 1/2	+1 1/4	+4.0		O	GENERAL TERMINAL CP	1-2	1 1/2	-1/4	-33.3	
N	FOXBORO	22-47	40 7/8	-7/8	-2.0		O	COMPUTER HORIZONS	8-30	24	-1/2	-2.0		O	GREAT SOUTHWEST IND	2-6	2 1/2	0	0.0	
O	FULCRUM CORP GRP	1-3	1 1/4	0	0.0		O	COMPUTER NETWORK	4-10	10	+1/8	+1.2		N	HAZELTINE CORP	7-31	25 1/8	+3/4	+3.0	
O	GENERAL AUTOMATION	3-18	13 7/8	-3/4	-5.1		N	COMPUTER SCIENCES	11-23	18 3/4	-1/8	-0.6		O	ICOT CORP	3-10	8 7/8	-5/8	-8.3	
N	HARRIS CORP	20-51	48 1/2	+2 3/8	+5.3		O	COMPUTER TASK GROUP	8-22	17 1/4	-1/4	-1.4		O	INFORMATION INTL INC	10-22	18 1/2	+2	+12.1	
N	HEWLETT-PACKARD CO	38-98	80 3/4	+7/8	+0.8		O	COMPUTER USAGE	2-22	18 1/2	-1/4	-0.3		O	INTEL CORP	11-38	37 1/2	+1 1/4	+3.4	
N	HONEYWELL INC	80-124	119	+1/2	+0.4		O	COMPUTER USAGE	2-22	18 1/2	-1/4	-0.3		O	IPL SYSTEMS INC	9-14	12 1/4	-1/2	-3.9	
N	IBM	57-124	121 5/8	+1 5/8	+1.3		O	COMPUTONE SYSTEMS	15-38	18	-1 1/2	-7.8		O	LUNDA ELECTRONICS	7-19	17 1/2	-1/4	-1.4	
O	IPL SYSTEMS INC	5-14	12 1/4	-1/2	-3.8		O	CONSERV CORP	10-20	13 1/4	+3/4	+6.0		A	RSI DATA CORP	14-38	22	-3/8	-1.6	
O	PARADIGM CORP	2-5	2	-1	-33.3		O	CONSHARE	8-13	12	+1/2	+4.3		O	NETWORK SYSTEMS CORP	9-34	31 3/4	-1 1/4	-3.7	
N	MANAGEMENT ASSIST	7-18	14 1/4	+3/8	+2.7		N	CULLINET SOFTWARE	12-50	43 5/8	+1/8	+0.2		O	OKEX	3-8	5 1/4	-1/4	-4.5	
O	MINI-COMPUTER SYST	1-2	3 1/8	0	0.0		O	CYCARC SYSTEMS INC	8-27	21	-2 1/4	-8.6		N	PARADYNE CORP	20-30	23 1/2	-1/4	-1.0	
N	MODULAR COMPUTER SYS	8-18	13 3/8	+1/2	+3.8		O	DATA DIMENSIONS INC	1-2	2	3/4	0		O	PENRIL CORP	7-14	12 3/8	+7/8	+7.0	
N	MODULAR DATA SCI	10-18	14 5/8	+1/4	+1.7		O	DATATAB	0-2	1 1/4	+5.0	+5.0		O	RAIEX CORP	12-28	17 3/4	-1/4	-1.3	
N	NCR	38-125	113 3/4	-4 3/4	-4.0		N	DIATRON CORP	2-6	3 1/4	-1/4	-4.3		O	RECONITION EQUIP	6-17	16	+5/8	+4.0	
N	PERKIN-ELMER	17-35	24	+1/4	+0.7		N	ELECTRONIC DATA SYST	10-42	39 3/8	-1 5/8	-4.3		A	SCAN DATA	1-3	3	0	0.0	
N	PRIME COMPUTER INC	11-30	23 3/4	0	0.0		N	INFORMATICS INC	10-54	27 3/8	+1/8	+0.8		O	STORAGE TECHNOLOGY	18-33	23 3/4	-1/8	-0.5	
N	SPERRY CORP	21-41	40 7/8	+1	+2.5		O	INSYTE CORP	1-3	1 1/2	-1/8	-7.4		O	SVES DATATRONICS	6-27	10 1/4	+1/8	+1.2	
O	TANDEN COMPUTERS INC	14-34	28 1/4	-3/4	-2.5		O	KEANE ASSOCIATES	4-15	14	-1/2	-3.4		A	T B&E INC	17	17	0	0.0	
N	TEKS INSTRUMENTS	71-178	123 1/8	+3 1/4	+2.7		A	LOLICON	12-44	42 1/4	+2	+4.8		O	TAB PRODUCTS CO	8-30	28 1/8	+3/8	+1.3	
A	WANG LABS "B"	13-42	38 1/4	+1 1/2	+3.8		O	PHOT SCI ARER INC	12-28	27 1/8	-1/4	-0.9		N	TEC INC	8-12	8	0	0.0	
A	WANG LABS "C"	11-42	38 1/2	+1 1/2	+3.8		O	MATHEMATICAL INC	12-22	16	0	0.0		N	TEKTRONIX INC	34-87	79 1/2	-1 7/8	-2.3	
LEASING COMPANIES																				
O	BOOTH FINANCIAL CP	22-35	47	-2	-4.0		O	NATIONAL DATA CORP	5-28	22 1/2	-1 1/8	-4.7		N	TELEX	5-31	28 7/8	+1/2	+5.2	
N	COMDISCO INC	7-37	38 5/8	+1 3/4	+5.0		O	POLICY MGMT SYST CS	38-69	58 3/4	0	0.0		O	TESDATA SYSTEMS CP	3-19	13 3/4	+1 5/8	+13.4	
O	COMMERCE GROUP CORP	1-2	1 1/4	0	0.0		O	PROGRAMMING & SYS	1-8	8	-5/8	-11.1		O	TIREPLEX INC	7-28	28 7/8	+7/8	+3.3	
O	COMPUTER INVESTOR GRP	1-2	3/4	+1/4	+50.0		O	REYNOLDS & REYNOLD	17-47	45	+1 1/4	+2.8		O	VISUAL TECHNOLOGY	8-26	21	-1/2	-5.6	
O	CONTINENTAL INFO SYS	5-32	28 1/2	-1/2	-1.6		O	SET CORP	11-34	29 1/2	+1/2	+1.7		B	MILTEX INC	1-4	1 3/4	-1/4	-12.5	
N	DPP INC	5-14	12 7/8	-1/2	-3.7		O	SHARED MEDICAL SYST	13-43	40 1/8	+2	+5.2		SUPPLIES & ACCESSORIES						
O	ITEL	1-3	1 1/8	0	0.0		O	SCIENTIFIC COMPUTERS	8-14	12 3/4	+1/4	+2.0		N	AMERICAN BUS PRODS	11-31	28	-1 1/8	-9.8	
O	LEAPAC CORP	1-2	1/8	0	0.0		O	SOFTWARE AG	5-17	10 3/4	-1/8	-1.1		O	BALTIMORE BUS FORMS	1-2	1	+1/4	+33.3	
N	U.S. LEASING	18-47	40 1/2	-1 3/4	-4.1		N	TYNSHARE INC	12-30	20	+1/8	+0.6		O	BARRY WRIGHT	13-31	28 7/8	+1 5/8	+5.8	
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P	AN INTERNATIONAL	2-7	3 7/8	+3/8	+6.8		O	UNIVERSAL DATA CORP	6-13	27 1/4	+5/8	+2.3		O	CYBERNETICS INC	1-2	1 1/4	-1/4	-18.8	
A	ANDERSON JACOBSON	8-28	21 1/2	+1/4	+1.1		O	UNIVERSAL DATA CORP	6-13	27 1/4	+5/8	+2.3		A	DUPLEX PRODUCTS INC	32-88	23 1/2	-3/4	-3.0	
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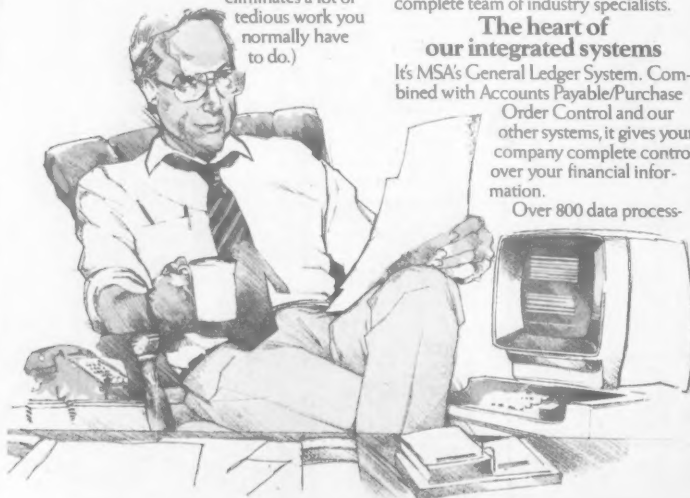
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Maintenance includes keeping your system up-to-date technologically. Enhancing it with new features that make it work even harder for you.

And making sure it reflects changes in accounting procedures and government regulations, including 401(k), TEFRA, and FAS52. (That

eliminates a lot of tedious work you normally have to do.)



Save this box. It can help you make an intelligent software decision.

1. Can you offer us a complete range of software systems designed to work together?
Or will we have to piece together a patchwork of systems?

2. Are your systems just record keepers, or can they really help us make decisions?
Can we pull together information from any of our integrated systems? In exactly the form we want it?

3. Can you provide business software for both mainframe and microcomputers?
Do you develop this software yourself or do you simply market it for another company?

4. Are your systems truly online?
How many of our information is current?
How many of your systems are online? How secure are they?

5. Will my company have to be the one that discovers the bugs in your brand new system?
Just how long have your systems actually been used, and how have they been tested?

6. Will you update your systems as technology advances and regulations change?
What are some of your most recent updates? Will you keep us current on regulatory changes?

7. Do your systems really do everything you say they will?
Or will we have to change them or add to them to get the features we want?

8. How long have you been in business?
What are your revenues? What is your growth record? Where will your company be five years from now?

9. How many systems has your company installed?
How many of these were installed in the past six months? How many of your earlier customers are still using—and liking—your systems?

10. Do your financial systems handle unlimited foreign currencies?
Do your financial systems use a common set of currency exchange rates?

11. Can you link our executives' computers directly to the mainframe—so they can get their own information?
Is that software available right now?

12. How will you make sure our own people thoroughly understand your system?
Do you have educational centers near us, or will we have to travel all the way across the country to find one? Will you be there to help during installation and after?

13. How many of your people specialize in software for my industry?
How many accountants work for you? Human resource specialists? Manufacturing experts?

14. Do your systems have built-in features that make them easier to use?
What happens if someone needs help figuring out a feature? Do you have online documentation that's easy to understand?

15. As my business changes, will your system be flexible enough to change with it?
Or will we have to pay a lot to revamp it? Or even regenerate it?

35,000 days of training

At MSA, we make sure your people have a firm grasp of our systems. Last year alone, we conducted more than 35,000 student days of customer training for over 1,800 companies. At education centers all over the world, as well as at our headquarters.

From training sessions to cassettes to complete, easy-to-understand documentation, MSA provides the most extensive Customer Education Programs in the industry.

And MSA systems are just as friendly as our people. Our online HELP feature actually guides users through our systems, and EASY-SCREEN™ lets them design their own screens without creating data processing nightmares.

If there's ever a question or problem with our systems, MSA customers are always close to service.

Our Account Managers are knowledgeable, responsive, and backed by a complete team of industry specialists.

The heart of our integrated systems

It's MSA's General Ledger System. Combined with Accounts Payable/Purchase Order Control and our other systems, it gives your company complete control over your financial information.

Over 800 data process-

ing specialists, accountants, and financial experts work together to make MSA's financial systems the most advanced and most highly integrated in the industry.

MSA has the answers

Whatever your size—whatever your business—MSA has a total software solution.

We'll provide the highest quality integrated online software.

We'll tie your business and manufacturing software systems together, using our exclusive Extended Closed Loop™ manufacturing system.

We'll provide business software for your microcomputers, through our Peachtree Software Company.

We'll even link your microcomputers to your company's mainframe—with MSA's Executive Peachpak™ application

software. A revolutionary concept that lets executives get the mainframe information they need through their personal computers.

Talk to us

If we've whetted your appetite with our 15 questions, clip the coupon below.

We'll send you a concise booklet that will help you even more in your deliberations. We'd also like to send you more information on how MSA can help you plan for software. And on individual systems.

Just fill in the information below, or contact Robert Carpenter at (404) 239-2000.

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8. Foreign Exchange
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10. Payroll
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14. Manufacturing Control System (MRP II)
15. Executive Peachpak™
16. Peachtree Software™ business systems for microcomputers
17. Peachtree Software™ office productivity systems for microcomputers

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